

PUBLISHED EVERY FRIDAY

AT

33, TOTHILL STREET, WESTMINSTER, LONDON, S.W.1

Telegraphic Address: "TRAZETTE PARL., LONDON"

Telephone No.: VICTORIA 8836 (6 lines)

Annual subscription payable in advance and postage free:

British Isles and Abroad..... £2 5s. 0d.

Single Copies..... One Shilling

Registered at the General Post Office, London, as a Newspaper

VOL. 61 No. 15

FRIDAY, OCTOBER 12, 1934

## CONTENTS

	PAGE
Editorials .. .. .	579
Letters to the Editor .. .. .	584
Publications Received .. .. .	585
The Scrap Heap .. .. .	586
Overseas Railway Affairs .. .. .	587
New Three-cylinder 4-8-2 Express Locomotive, Czecho-slovak State Railways .. .. .	590
A Norwegian Power Signalling Installation .. .. .	592
Application of Street Traffic Lights to Railway Crossings .. .. .	594
Opening Ceremony at Grimsby Fish Dock .. .. .	596
Railway News Section .. .. .	597
Personal .. .. .	597
News Articles .. .. .	599
Notes and News .. .. .	605
Contracts and Tenders .. .. .	608
Official Notices .. .. .	609
Railway Share Market .. .. .	610

## Industry and the Steam Engine

A SUBSIDY to the consumer, to enable him to fulfil his desire to buy the goods and services the producer must sell, was suggested by us last week. This week we publish a letter in which a National Dividend is proposed for the same purpose: "A rose by any other name . . ." Indeed, the only people who dislike the idea of dividends are those who unfortunately do not receive them—the great majority of the populace. They can never envisage themselves in receipt of that attractive little warrant that comes along, unearned (or at any rate not in return for services directly rendered), to the more fortunate. As a National Dividend would be payable to everyone, and as the sound of a subsidy is so objectionable to the taxpayer, let us at once re-name our proposed subsidy to the consumer a National Dividend. It would, as we said last week, have to be "non-recoverable," i.e., it would have to be paid out of a new creation of money, or it would defeat its object. Our industrial system is rather like the reciprocating steam engine: attention has been devoted almost entirely to getting high pressure steam into the cylinder, and, until lately, insufficient attention has been paid to exhausting it freely. We have an abundance of production, but the whole machine is sluggish because we cannot get rid of it quickly enough. A National Dividend would be like enlarging the ports and steam passages, and, after all, money is only a means, of no value in itself, to the end of getting production over to consumers.

## Ceremonial at Grimsby

The spirit that animated the opening ceremonies of the early railways was recaptured at Grimsby last week, when, as reported elsewhere, the new fish dock was inaugurated by Sir Henry Betterton. A turbulent quarter hour of thunder, lightning, and hail failed to dislodge a crowd of ten thousand, which was rewarded by an abundance of bunting and as rare a pandemonium of syrens as the wettest could require for his appeasement or the resources of the port provide. True, the cannon is no longer regarded as a suitable instrument for the expression of pleasure, so that a popular feature of early railway openings was absent, but music of a sort more in keeping with the pacific temper of the age was provided by a choir of two hundred schoolchildren singing "The Fishermen of England." The feats of oratory and gastronomy achieved by the nineteenth century in its ceremonial moments were reproduced at the official tea party, which was followed by lengthy speeches, serving as a preliminary canter for the civic banquet in the evening. In addition there was a procession, a band, and, to quote the *Leeds Mercury*, an assembly which "cheered and cheered again." Thus does the modern spectator express that enthusiasm which impelled those present at the opening of the Leicester and Swannington Railway in 1832 to cry with astonishing unanimity, "See, the puffing monster moves!" The jubilation which reigned at the birth of railway prosperity has been happily recreated at its revival.

\* \* \* \*

## The Week's Traffics

Moderate increases in earnings were shown by the four group railways for the past week, but they go against moderate increases recorded in the corresponding week of 1933, when general merchandise receipts in particular were up. The estimated gross takings of the four companies together for the 40 weeks of 1934 are £115,216,000, an increase of £4,813,000 or 4.36 per cent. In passenger train takings for the year to date the L.M.S.R. is £304,000 up, the L.N.E.R. £216,000 up, and the Southern £178,000 up, but the Great Western is £5,000 down. Merchandise traffic increases are £1,270,000 on the L.M.S., £934,000 on the L.N.E., £461,000 on the Great Western, and £106,500 on the Southern. The L.N.E.R. has a lead of £778,000 in coal class receipts, and the corresponding increase on the L.M.S.R. is £405,000.

	40th Week				Inc. or dec.	
	Pass. &c.	Goods, &c.	Coal, &c.	Total.	Year to date	%
L.M.S.R. ..	+ 8,000	+10,000	- 3,000	+15,000	+1,978,000	+ 4.48
L.N.E.R. ..	+ 5,000	+16,000	+ 8,000	+29,000	+1,928,000	+ 6.03
G.W.R. ..	+ 3,000	+ 5,000	- 1,000	+ 7,000	+550,000	+ 2.92
S.R. ..	+ 2,000	+ 1,500	- 500	+ 3,000	+356,000	+ 2.31
	*	*	*	*		

## Inner Circle Jubilee Fare Reductions

A notable fare anomaly of long standing was that which applied until Wednesday of last week on the Inner Circle service in London. The reason was to be found in the different charging methods used by the old Metropolitan Railway, which owned the northern section of the Circle, and by the District Railway, which owned the southern section. With the unification of ownership under the London Passenger Transport Board, even less justification existed than formerly, and it was obvious that the board would take steps to rectify the position as soon as the consequential changes could be made conveniently. These alterations, which came into force last week, amount to a reduction from 1½d. to 1d. of fares between stations on the northern section, and thus secure uniformity with former Underground practice. The reductions may be looked upon as a present to the London traveller,

however accidentally, on the occasion of the Inner Circle jubilee, for it was on October 6, 1884, that the opening of the final link, between Mansion House and Aldgate, completed a "circle" which had been hitherto a horse-shoe. The story of the famous Inner Circle service formed the subject of an editorial article on page 202 of our issue of February 9 last.

\* \* \* \*

#### "Per Ardua ad Astra pro Mercatura"

In our issue of May 18 of this year we published an article accompanied by a map showing all the regular internal airways operating at that time within Great Britain. This aroused considerable interest, for it was, we believe, the first occasion upon which any comprehensive particulars of the sort had been published. In fact it would seem that in many quarters it was not realised how rapid had been the development of internal airways since the G.W.R. inaugurated its Cardiff-Plymouth service early in 1933. Since May last, however, many important changes have taken place, and the summer route mileage of internal airways has leapt from about 2,000 to just over 3,000 miles. Thus, it seems, the time has now arrived to re-survey the situation, and on page 600 of this issue we reproduce a revised map accompanied by an account of the developments that have occurred. It will be seen that these are of no mean order, especially when it is remembered that they are confined to the span of a single summer, and the leading part that has been played in this achievement by Railway Air Services may be specially noted. In addition to providing the Postmaster General with services adequate to warrant a thorough test of the possibilities of an internal air mail service, Railway Air Services Limited has also shown a generous desire to co-operate with independent operators in furthering this still experimental form of transport.

\* \* \* \*

#### Great Western Railway Holiday Traffic

A satisfactory feature of the £24,000 increase over 1933 shown by Great Western Railway passenger revenue for the holiday period from July to September, is the contribution to this result of the various special inducements designed to promote traffic. The most important innovation, that of camping coaches, attracted 15,000 applicants, three times more than could be accommodated. Reservations are already being made for 1935, by which time more of these carriages will be available. Facilities in force last year have enjoyed increased popularity this summer, an outstanding item being the seven-day holiday season ticket, with an issue eighty-six per cent. in advance of the 1933 figure of 30,000. Fifteen per cent. more passengers enjoyed the six and twelve-day land cruises and there were over 500,000 bookings, the highest figure for many years, by Sunday excursions. The number of circular tours offering travel by land and water was increased by thirty per cent. over those arranged in 1933. In face of the diversity of recreations available today the railways deservedly retain the faith of the public as a medium for holidays by combining solid tradition with modern enterprise.

\* \* \* \*

#### Six Months' Passenger Traffic

Accompanying the Ministry of Transport statistics for the month of June, 1934, is an analysis of traffic for the first six months of the year of the standard-gauge railways of Great Britain apart from London Transport railways and the Whitechapel & Bow Joint Railway. The most prominent feature of the analysis is the continued growth of "period excursion" passengers and receipts which

include the summer tickets issued regularly since May 1, 1933. Period excursion passengers during the six months numbered 18,898,401, an increase of 9,345,875 or 97.84 per cent., and brought in £6,822,299, an advance of £3,173,837 or 86.99 per cent., but not entirely at the expense of standard fare and week end bookings. The increase in period excursion numbers, for instance, fell short of the combined decrease in standard fare and week end passengers by 637,187, but the corresponding excess in receipts was £434,685. There were 43,217,707 standard fare passengers during the six months, a decrease of 6,439,152, or 12.97 per cent. in comparison with the first half of 1933. Standard fare receipts amounted to £3,203,965, a decrease of £1,798,816 or 35.96 per cent. Week end receipts were £123,162, or £940,336 less.

\* \* \* \*

#### Railway Instruction for Schools

It is too much to expect in these days that every child will develop unaided that wholesome respect for the railway which seemed inevitable a generation ago. But timely propaganda may still divert many a potential road operator, or patron thereof, from his half-formed resolve, for which reason the L.N.E.R. moves wisely in organising demonstrations of railway working for schools. Previous enterprises of this type, attracting more than 20,000 visitors, have been held at Leeds, York, Darlington, Newcastle and Hull. This winter will see the plan extended to Durham, Scarborough, Sunderland and Harrogate. As recorded in our issue of December 1, 1933, exhibitions have been arranged with a similar purpose of extending railway knowledge by the German Reichsbahn, and at schools in various Bavarian towns subjects such as the reading of timetables and the filling up of ticket application and other forms have been introduced into the curriculum. The L.N.E.R. appeals rather to the mechanical instinct by demonstrating the technicalities of railway working, but there is no doubt that appreciation thus aroused will foster that ready compliance with formalities which distinguishes the perfect passenger.

\* \* \* \*

#### Gold Coast Railway

The report of the Gold Coast Railway and Takoradi Harbour for the financial year ended March 31, 1934, which we have received from Mr. L. M. Smart, General Manager and Harbour Authority, contains an interesting summary of the history of the railway and an excellent map, showing the 500 miles of line in operation—all on the 3 ft. 6 in. gauge except a short branch near Accra. Headquarters of the administration have now been removed from Sekondi to Takoradi. Earnings for the year under review showed a substantial improvement chiefly because of the increase in manganese and cocoa traffic. Passenger traffic was again affected by road competition, but extensions of cheap fares have to some extent remedied this, and a general revision of fares is foreshadowed. Other coaching traffic improved. The operating ratio—the lowest since 1928-29—is satisfactory, and the net earnings represent 4.21 per cent. on borrowed capital, against 2.82 per cent. in the preceding year. These earnings were insufficient to meet loan charges.

	1933-34	1932-33
Passengers.. ..	1,060,626	1,144,756
Goods, tons .. ..	663,180	391,077
Train-miles .. ..	922,963	860,057
Operating ratio, per cent. ..	51.13	61.60
Gross earnings .. ..	796,730	683,103
Ordinary expenditure .. ..	407,337	420,800
Net earnings .. ..	389,393	262,303
Loan charges .. ..	471,324	466,879
Net loss .. ..	81,931	204,576

### Newspaper Fliers

Eclipsing previous records, another "fastest newspaper train in the world" has made its appearance. The Great Western Railway only recently claimed the "longest non-stop newspaper train journey in the world" by inaugurating the 12.50 a.m. service from Paddington to Plymouth, making its first stop at North Road station, 225½ miles away, in 4 hr. from London. Now a new "newspaper," which, as we recorded last week, began to run on October 1, leaves Paddington at 1.20 a.m. for South Wales, reaching Newport without a stop at 3.37, so that this initial 133.4 miles of the journey must be covered at an average speed of 58.4 m.p.h., and in four minutes less than the quickest passenger express. The 12.50, however, still has some claim to the laurels, for it is due to pass Exeter at 3.39 a.m., so covering the first 173.5 miles of its journey at 61.6 m.p.h. As to the 1.40 a.m. down, which on its inauguration was also hailed as "the fastest newspaper train in the world," the time of this flyer has now come down to 139 min. for the first 142.7 miles to Taunton, which works out at 61.6 m.p.h. from start-to-stop. But it has now opened its doors to passengers, and so is perhaps regarded as *hors concours*. Envious eyes will also be cast by the South Wales passenger on this latest development of railway speed. If he were carried from Newport to Paddington as quickly as his inanimate newspaper is carried from Paddington to Newport, he would save twenty minutes on his average express journey time.

\* \* \* \*

### New Zealand Railways and Coastwise Shipping

In the latest report of the New Zealand Railways Board allusion is made to complaints by shipping and harbour interests that the railways were competing with coastwise shipping at uneconomic rates, which had also an adverse effect on harbour revenues. Those making the representations were unable to suggest any formula to relieve the position. It was obviously impossible to lay down that railways should not in any circumstances compete for traffic with coastwise shipping, for such a demand would ignore two very vital factors, namely the development of road services and the construction and operation of new railways through districts where coastwise shipping formerly had a virtual monopoly. Competition between railways and coastwise shipping is, of course, no new thing. It has existed ever since railways began to operate in New Zealand, though it has undoubtedly developed in intensity during recent years. This has not been due to a policy of aggression on the part of the railways, but to circumstances over which they had no control and of which they have been victims as much as the coastal services. A phenomenal development of transport facilities has synchronised with the trade depression and a consequent substantial diminution in the amount of transport work available. In the judgment of the Board none of the rates of which complaint has been made has been proved to be uneconomic.

\* \* \* \*

### Aluminium Freight Cars in America

What is believed to be the first all-aluminium hopper wagon built by any railway was recently completed and placed in service on the Baltimore & Ohio Railroad. This vehicle was nominally rated at 55 American (2,000 lb.) tons capacity because of its general construction and design. As now built, however, it is classed as a 70-ton wagon since the lighter weight of the materials used enables it to carry an additional load on the same size journals as in the older type of car. The use of end

hoppers with end doors increases the cubic content sufficiently to make room for the greater load. The gross load remains the same, but the weight saved by the use of aluminium permits the car to carry a larger paying load. Standard 50-ton bogies with 5½ in. × 10 in. journals are used, and the bolsters, spring planks, and brake levers are all of aluminium. A number of aluminium alloys are incorporated in the construction of the vehicle, which has a length of 35 ft. and a width of 10 ft. 2 in., both inside measurements. The tare weight of the car is just under 14 tons. The tare weight of a steel car of corresponding dimensions, but without end hoppers, is 22 tons and the load limit 62½ tons, a ratio of 35.1 per cent. compared with the 19.6 per cent. of the aluminium vehicle. All weights quoted are in American tons.

\* \* \* \*

### Eight-Coupled Express Locomotive

The introduction of new classes of express locomotives with four coupled axles now excites but little comment, for the eight-coupled engine is ousting the six-coupled type just as surely as the latter has replaced the four-coupled during the past 20 years. The explanation is found in the demand for sustained speed capacity in conjunction with the ability to handle heavy loads regardless of gradients, conditions which call for the exertion of high tractive effort at high speed, as well as an initial effort of great magnitude. The provision of eight-coupled wheels enables a bigger boiler to be fitted, in addition to increasing the adhesion weight by approximately 30 per cent. Among the latest express locomotives having the characteristics referred to are the new 4-8-2's on the Czechoslovak State Railways. These have three cylinders of large dimensions, viz., 21½ in. × 26½ in., and each cylinder is fitted with a separate set of Walschaerts type valve motion. A feature of the design is that all three sets have return cranks attached to outside crank pins, the eccentric driving from the axle for the inside cylinder being absent in this design. The boiler of the locomotive, of which details will be found on page 590, is of large proportions and the equipment of the most modern description throughout.

\* \* \* \*

### Are Trains too Heavy?

It is sometimes argued that railway rolling stock and locomotives, as built to meet present day traffic conditions, are too heavy in proportion to their capacity. The contention put forward is that, following the lines of the motor car industry, much might be achieved by using lighter materials, resorting to welded instead of bolted and riveted connections, and so on. The haulage of unnecessary weight naturally entails waste of energy and is reflected in the coal bill, whilst the passage of heavily loaded wheels, especially the coupled wheels of the locomotive, over the track, affects the cost of maintaining the permanent way and structures. The word "unnecessary" itself gives rise to further argument, for there are definite limits below which it is inadvisable, if not actually unsafe, to go in the construction of modern locomotives and rolling stock. Yet as has already been shown both in this country and abroad, much can be done towards reducing weight without taking any such risk or interfering with stability and comfortable riding. Higher grade steels, for instance, make possible a reduction in the weight of motion details and boiler plates without sacrifice of strength. The use of aluminium and aluminium alloys has already combined lightness with rigidity in other phases of both locomotive and carriage construction. The matter is one which must, as a matter of course, claim closer attention from railway engineers as time goes on.



## The Nigerian Railway Report

THE Nigerian Railway, which is 1,905 miles long, and has a capital of £23,000,000, is the largest of those in the Crown Colonies. The following are some comparative statistics in regard to the undertaking:—

	1931-2	1932-3	1933-4
Gross receipts .. ..	£1,869,519	£1,899,050	£1,885,660
Expenditure .. ..	£1,191,447	£1,111,126	£1,086,125
Operating ratio (per cent.)	63·73	58·50	57·59
No. of passengers ..	2,480,977	2,377,938	5,179,206
Total receipts .. ..	£206,568	£178,460	£198,606
Average receipt per passenger .. ..	1s. 8d.	1s. 6d.	0s. 9d.
Goods tonnage .. ..	667,224	646,054	627,475
Average receipts per ton ..	46s. 3d.	49s. 11d.	50s. 6d.

The report inevitably reflects the personality of the General Manager, as unlike most annual reports, which are so often a mere collection of data sent in by heads of departments, this is compiled on rather unusual lines, and is somewhat dogmatic in places. The most astonishing feature of the report is the rise in the number of passengers carried from 2,300,000 in 1932/3 to over 5,000,000 in 1933/4. This was the result of a reduction in the fare to ½d. a mile third class, and appears to have been obtained without any material increase in train mileage. The receipts only rose £20,000 and the average fare fell from 1s. 6d. to 9d. The General Manager remarks: "Apart from an encouraging travel, these reductions have enabled market produce to be very cheaply conveyed in bundles by third class passengers, and are probably doing a great deal to keep down the cost of food to the African population of the large towns, during a period when their earning power is low." In a native country, to carry over 5,000,000 passengers a year out of a total population of 20,000,000 is a very satisfactory result.

Some of the figures in the report are presented in a new manner. From one of the tables it appears that the railway failed by £763,000 to meet its full liabilities for interest and depreciation funds, although the proportion of every £1 of gross revenue available for payment of interest, and the contribution to Renewals Provision, rose from 8s. 5d. to 8s. 6d. As for the previous three years, no contribution was made to the Renewals Fund, and it is calculated that the fund is now short to the extent of nearly £2,000,000. The General Manager is arranging for a re-assessment of the railway capital assets on the basis that part of the capital expenditure should be regarded as money spent on the general development of the colony, and when this is done, if a Renewals Account is prepared as from the date on which the assets were put into service, a very much greater Renewals Fund shortage will become apparent. There is a very interesting section in the report on competitive road transport. Various steps were taken to combat this form of competition, which is largely in native hands, and in October 1933, a flat rate of 2d. per ton mile, including terminals, was brought into effect on the first 300 miles of the railway, which runs through the most competitive zone. This attempt to attract traffic to the railway proved unsatisfactory. The price of petrol was reduced and so were the road rates. The result was that the railway carried almost exactly the same tonnage but obtained £16,000 less in receipts. The General Manager presses for area licensing authorities on the lines of the arrangements recently set up in Great Britain under the Road and Rail Traffic Bill.

Figures are shown in the report of the revenue per coaching vehicle and goods wagon in service. In five

years the figures have dropped from £1,600 a coaching vehicle and £650 a goods vehicle to £1,000 and about £490 respectively. Similar figures are given for locomotives, and in commenting on them the General Manager says: "The heavy decline in Nigerian trade is clearly evident. The lack of large locomotives and consequent double-heading also affects the earning power per locomotive. Their earning power is also affected by rate reductions. It is improving." The long haul ground nut traffic reached a record tonnage of 206,000 tons. Its average haul is some 600 miles, and the rate worked out at 1·39d. per ton mile. The growing of cotton in the northern provinces increased due to the decline in the demand for grain and food crops by the tin mines, which are now operating under a restricted output arrangement. The average length of haul was about 320 miles for freight traffic, comparing with about 328 miles in 1931-32, thus indicating the loss of short distance traffic. The net train loading showed a satisfactory increase. A review of the locomotive stock is taking place with a view to eliminating obsolete engines and avoiding double heading. The General Manager remarks in this connection as follows: "The functions of colonial railway workshops also arise. The colony is dependent for its development upon capital from Great Britain. Its purchasing power has heavily declined owing to trade conditions, and this has affected unemployment in Great Britain. It would appear logical for a colonial railway to purchase, as far as economically possible, at the source of its capital supply. That is to say, that the functions of colonial locomotive workshops should be maintenance and betterment rather than extensive rebuilds of old engines. On the carriage and wagon side, the use of colonial timber is desirable and rebuilds can be effected economically and with advantage to colonial production. A standard covered goods wagon body in Nigerian timber has been developed and can be rapidly constructed in quantity." In showing the details of the engine position on the Nigerian Railway, the tractive effort at 15 miles an hour is given instead of the tractive effort at starting point, which is a new departure in this report. The General Manager visualises express diesel railcars running from Lagos to Ibadan (119 miles), the latter being one of the largest cities in native Africa with a population of a quarter of a million. There are two main workshops on the Nigerian Railway, one at Lagos and the other on the eastern side at Enugu. Concentration of work is taking place at Lagos, and the other shops are carrying out running repairs only and working on short time.

An interesting section of the report deals with the appointment of the Research Assistant to the Chief Mechanical Engineer, and some of his work will be of value not only in Nigeria but on other colonial railways. Dealing with job analysis, the General Manager writes: "The outstanding success of the 'job analysis' policy of the London Midland & Scottish Railway, and its adoption by the Indian railways, show clearly that routine staff have not the time fully to analyse detail or to follow up experimental work. If this is not someone's special duty it is not done, and important economies are missed. This is also very fully recognised by motor vehicle manufacturers. While the depleted staff of the railway will not allow of a full job analysis committee to investigate all departmental work and clerical activities, it is intended to do this from time to time under the chairmanship of the Principal Assistant to the General Manager." In accordance with policy, many posts on the railway are being filled by men of African descent, and remarkable progress is shown by the following figures of native staff: Station masters, 100 per cent.; guards, 94·5 per cent.; locomotive



drivers, 53 per cent. It will be realised that the work of training Africans is of very great importance and requires considerable organisation. The report shows that expenditure fell in all departments.

An interesting change in the organisation of the railway has been made. In 1924 General F. D. Hammond, C.B.E., D.S.O., recommended that the divisional system should be applied in Nigeria. This was done in 1925 and the line operated in three divisions in charge of divisional superintendents responsible for commercial, operating, motive power, carriage and wagon, and miscellaneous machinery, plant and equipment activities. This system of organisation has now been replaced by a modified form of departmental organisation based on that in force on the Great Western Railway, by which company the General Manager was for many years employed before joining the Colonial railway service. Attached to the report as an appendix is a personal memorandum on the subject by the General Manager which those interested in organisation should read. This is not the place to enter into a discussion on the merits of divisional *versus* departmental organisation. The General Manager's memorandum refers to the conditions under which the divisional system is successfully exploited and states a reasoned case against its application to Crown Colonial requirements. The question is one which must depend largely upon local conditions, and it is therefore reasonable to accept the judgment of the man on the spot.

### Were Railways an Accident?

IN his inaugural address last Monday, as reported on another page, Mr. Sidney E. Garcke, the new President of the Institute of Transport, made one or two imaginative excursions into the possibilities that might have followed a diversion of inventive genius in the early stages of industrial civilisation. If, for example, rubber had been developed a century ago Stephenson might have applied himself to the development of road services and the railway might, we suppose, only now be in a process of testing. The chain of thought set up by such a speculation is hard to turn from, for it is full of fascination, but it will not be profitable to pursue it beyond a certain point. However, when Mr. Garcke refers to the "special and very costly highway laid with rails" we are tempted to suggest that the development of industry, which depends essentially upon efficient transport, would probably have been much slower and more expensive but for the coming of the railway. The purpose of steel rails is not merely to reduce frictional resistance to movement but also to provide a guiding track upon which trains of vehicles can move speedily and with low energy consumption without serious risk of accident. Transport of this sort by road is still quite impossible, and each vehicle must be manned by a capable and experienced driver. Thus, to move 1,000 tons of freight by rail only one man in an electric locomotive is required, or even under present conditions two men on a steam engine and a guard, whereas to transport an equivalent load by road would require 100 lorries and 100 men at least, and even with pneumatic tyres would demand a type of road which was not evolved until nearly 100 years after George Stephenson made an efficient railway.

We will not dip too deeply into the question of cost, however, for that is a more controversial matter which we have discussed at length on previous occasions, but we should perhaps mention here that the cost of lighting and policing the public highway is not borne either entirely or directly by road users, whereas the railway is a completely self-contained highway, all the costs of which are carried by the owners. Of course, if the rubber tyre

had been evolved a hundred years ago, when the cost of turnpike road maintenance was collected by tolls levied at frequent intervals, we might by now have reached a stage of development such as that outlined in an editorial article in these pages in our issue of August 19, 1932. We then pointed to the logical basis of fair road and rail competition and suggested that the road user could be made to pay for his permanent way and signalling on an equality with the providers of rail transport only if a system of toll gates at approximately 20-mile intervals were instituted. The whole civilised world might, as Mr. Garcke said, have been spared the development of two distinct transport systems, and the subsequent competition between them, but for the chance that actual development took what we contend is a much more economical line. Mr. Garcke considers that there has been a great wastage owing to the development of the railway but he does not define what he means by waste, and the fact remains that at the present time the real wealth of the industrial world, *i.e.*, its productive capacity, is far greater than its ability to consume. Our failure to arrange a system of distribution which will enable those desirous of so doing to consume more of the goods that are available is the supreme example of waste, to the remedying of which every effort should be turned.

### Chinese National Railways

WE have recently received from the Ministry of Railways, Nanking, reports containing statistics of the Chinese National Railways for the years 1928—1931 inclusive. These are the latest available, and the report for 1931 is the seventeenth issued by the Administration. The first report covered the operations of the year 1915, and this as well as those for the years immediately subsequent was of a most comprehensive character, containing full particulars not only of the financial results of the grouped and individual railways, but also of the passenger numbers and of the tonnage, tonne-kilometres, average haul, average train load, &c., of goods traffic. A map, together with numerous graphs, was also presented with each issue. In this series, which included the years 1915 to 1925 inclusive, the last report dealt with at length in THE RAILWAY GAZETTE was that for the year 1924, in the issue of July 29, 1927. During this eleven-year period the reports were based on the periodical returns of the individual railways which had been prepared in accordance with the system of accounts originally promulgated and enforced by the then Ministry of Communications as from January 1, 1915, and modified from time to time at periodical conferences of the Advisory Committee on the Unification of Railway Accounts and Statistics. They were compiled by the Statistics Division of the Department of Finance at Peiping. Between 1924 and 1928 was a particularly disturbed period in the history of China. In 1927 the Government was nominally centred in Peiping for Northern China, while in Southern China the Nationalist Party had set up a Government at Canton. In July, 1928, Peiping and Tientsin were captured by the Nationalists, and the capital of the country was transferred to Nanking. During this period, and even earlier, railway operation had been seriously interfered with by the military movements of the different Governments, and the accounts of some railways had been unduly delayed for three or four years. In order to enable those railways to bring their accounts up to date, they were instructed by an order of the Ministry of the new Central Government, dated December 15, 1928, to submit for the years 1926, 1927, and 1928 only a summary of their financial accounts and to omit various statistics of passenger and goods traffic. Reports

for the years 1926 and onwards have accordingly dealt with only the financial accounts. With the establishment in December, 1929, of the Bureau of Railway Statistics and the consequent abolition of the Statistics Division of the Department of Finance, the work of compiling the reports is now undertaken by the Financial Accounts Division of this Bureau. The reports for the years 1926 and 1927 were not issued until March 26 and October 25, 1930, respectively. While in general the form and arrangement of the reports for the years 1928-31 inclusive follow closely those of the 1926 and 1927 reports they differ from them in that the Chinese and English versions are published in separate volumes and no map is provided. Furthermore, the English version is a translation of the Chinese text, thus reversing the former practice of making the English version basic.

During the latter half of 1928, owing to the cessation of fighting, traffic on the lines in Central China gradually resumed normal proportions, and consequently operating results upon the Peiping-Hankow, Tientsin-Pukow, Kiao-Tsi, Peiping-Suiyuan, Lung-Hai, Nanking-Shanghai and Shanghai-Hangchow-Ningpo were very satisfactory. At this point it will be as well to recall that during the period under review the various Chinese State Railways in Manchuria were still under the Ministry, though these have subsequently become Manchukuo lines. For the following notes, therefore, the map published on page 520 of our issue of September 28 last, will be useful. The Peiping-Mukden (Liaoning) was still subjected to great difficulties in 1928, and in that year the 253 km. branch from Taku-shan to Tungliao Hsien of the Peiping-Mukden Railway was opened. Figures relating to the 562 km. of the Kirin-Tunhwa and the Shenyang-Hailun Railways were included for the first time in the report for 1929. These two railways, however, with two others (the Kirin-Changchun and the Ssu-Tao) did not submit their reports for the year 1930, but the Peiping-Liaoning, Cheng-Ttai, and the Taokow-Chinghua Railways, unlike the Hulan-Hailun, secured revenues greater than in 1929. Returning now to the railways still under Chinese administration, during the period March-October, 1930, the struggle between the

north-western military forces and the National Government army had been carried on in an intensified form in the provinces of Honan and Shantung. On account of their interruption and interference, the Lung-Hai, Kaifeng-Honan, Tientsin-Pukow, Hupeh-Hunan, Nanchang-Kiukiang, and Kiao-Tsi (or Tsingtao-Tsinan) Railways suffered losses in a greater or less degree. As the situation in North China, as opposed to Manchukuo, showed for the moment considerable progress towards stability throughout the year 1931, the railways correspondingly showed an increase in operating revenues as compared with the previous years, but the Manchukuo lines were again in the throes of war. Operating expenses, on the other hand, showed a disproportionate increase on account of the fact that, apart from the natural increase due to increased traffic, heavy repairs had to be made to road and equipment, which had been greatly damaged by the military disturbances in the previous year. The accompanying table shows the operating results of those railways from which reports had been received for the year 1931, comparing with the results of the same railways for 1930:—

	Operating revenues		Operating expenses	
	1931	1930	1931	1930
	\$	\$	\$	\$
Peiping-Mukden .. (Peiping-Liaoning)	42,758,750	38,819,627	22,107,283	22,136,529
Peiping-Hankow ..	22,744,820	20,138,648	16,417,357	14,799,986
Tientsin-Pukow ..	19,631,780	13,377,823	12,715,619	11,202,296
Nanking-Shanghai ..	15,041,110	12,431,071	10,376,618	8,645,039
Kiaochao-Tsinan ..	14,133,235	12,783,382	9,555,582	8,451,765
Peiping-Suiyuan ..	7,418,916	5,708,154	6,882,793	5,418,343
Shanghai-Hangchow-Ningpo	7,386,844	6,396,232	5,367,841	4,680,958
Lung-Hai ..	7,035,612	5,075,212	4,693,768	2,777,110
Cheng-Tai ..	5,525,047	5,880,266	3,264,056	3,415,685
Hupeh-Hunan .. (Part of Peiping-Hankow-Canton route, part of Lung-Hai)	2,907,386	2,015,254	3,326,434	2,641,924
Kaifeng-Honan ..	2,851,220	2,449,484	2,017,675	1,099,647
Taokow-Chinghua ..	1,871,926	2,464,828	1,108,346	800,391
Canton-Kowloon ..	1,816,795	1,626,912	1,573,343	1,523,598
Nanchang-Kiukiang	1,612,804	1,245,939	1,230,049	1,119,621

## LETTERS TO THE EDITOR

(The Editor is not responsible for the opinions of correspondents)

### Planning and Subsidies

25, Earl's Court Square, S.W.5.

October 6

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—May I say how extremely interesting I find your notes each week on current financial and economic questions. It is very encouraging to find such eminently sensible comments on these matters appearing in a technical journal, for, if the world is to be pulled out of the mess it is in at present, it is essential that the engineers and technicians should lend a hand. Such vital matters as the control of the financial system—which means control of everything—must not be left entirely to those at present in charge, many of whom have not sufficient practical knowledge to run a wheel stall.

Your reference to schemes of planned economy are particularly timely. Those who care to investigate will find that all such proposals are actually only attempts to bolster up the existing financial system by restricting production to demand. In Italy and Germany, for example, all the more important industries are now prohibited from introducing new plant, or extending existing works. Industry is being run in these and other countries, not to produce the maximum quantity of goods that people require, but to give the

maximum amount of employment, while restricting production to existing demand. Subsidies are being used for similar ends, for, in the majority of cases, they are issued to producers who consent to restrict output "according to plan."

There is, obviously, a tremendous demand for goods and services in this country, which remains unmonetised owing to the increasing inability of industry to distribute sufficient purchasing power to consumers through wages, salaries and dividends. Alongside this demand there is an immense potential supply, as is evidenced by idle plant and idle men. There is no reason on earth why this demand should not be monetised and the potential supply made actual, and this could be done in the manner you suggest, that is, by means of a non-recoverable subsidy to consumers.

A campaign is now being organised to encourage the electorate to demand a National Dividend, and to refuse to vote for any candidate who does not undertake to demand its payment. I hope that this campaign will have your support, and that of all your readers.

I am, Sir,

Yours faithfully,

M. JACKLIN

[We refer to this letter in an editorial note on page 579.—Ed.—R.G.]

## PUBLICATIONS RECEIVED

**Journal of the British Wood Preserving Association, 1934.** London: The British Wood Preserving Association, 166, Piccadilly. 9½ in. × 6 in. 135 pp. Price to non-members 7s. 6d. —The fourth volume of this journal has now been published and contains illustrated reprints of papers read to the association during the year, together with articles, notes on research work and reviews of technical books. The paper on the use of treated timber in rolling stock construction read by Mr. W. H. Brown, Carriage and Wagon Works Manager, York, L.N.E.R., on February 7 last, and summarised in THE RAILWAY GAZETTE of February 23, appears in full with diagrams.

**Copper Through the Ages.** London, 1934: The Copper Development Association, Thames House, Millbank, S.W.1. 8½ in. × 6¼ in. 64 pp. 29 illustrations. —A note appended to this volume states that no attempt has been made to include technical or other information of a practical nature. Its purpose, in fact, is fully expressed in the title, and is excellently fulfilled in the brief compass of 64 pages which recount the history and applications of copper from the age of a neolithic civilisation existing before the estimated period of the Great Flood up to the present time. Many illustrations of copper ornaments and utensils which have survived from the ancient world are reproduced and their probable age and methods of manufacture discussed, after which the coming of copper work to this country and the establishment of the industry here is dealt with in outline. Uses of copper in the electrical industry and in architecture have chapters to themselves, both distinguished by some of the finest illustrations in the book. The concluding pages summarise other modern applications of the metal, its use in the construction of locomotive fireboxes being exemplified by a short description of that fitted to the L.N.E.R. 2-8-2 express locomotive *Cock o' the North*, which is the subject of one of the illustrations. "Copper Through the Ages" is bound in attractive green cloth covers of a shade appropriately inspired by certain copper salts, and well set off by the bold gold lettering of the title.

**In and Under Britain.** By M. H. Haddock. London: Crosby, Lockwood & Son Ltd., Stationers' Hall Court, E.C.4. 5½ in. × 8½ in. 251 pp.; 139 illustrations. Price 6s. 6d. net. —Although this book bears the sub-title "The Story of Coal for Young People (and Some Elders)," it has been written more as an introduction for students to the subject of coal-mining than as a popular "boy's (and girl's!) book." From this viewpoint Mr. Haddock offers a very readable book and presents an interesting picture of the coal miner's work, his tools, and the natural forces with which he has to contend. The coal

seams, the history of coal mining, modern technique, and the advent of the machine are all explained in language of studied simplicity, and we have rarely seen a book of this kind that is so well illustrated. Both brevity and the avowed object of the volume prevent lengthy expositions of theoretical points or the employment of abstruse terms.

Chapter IX, which treats of railways and trains in mines, differentiates between, and covers both, surface and underground haulage. The early development of the locomotive is described and illustrated, and this section includes references to Trevithick, Murray, George Stephenson, and other pioneers. Modern coal haulage is exemplified by a Beyer-Garratt articulated locomotive and by telferage systems.

Of mine haulage, the author reminds us that "formerly women and children laboured like beasts to take the coal from the face to the surface. They were simply slaves, and often while they were climbing the ladders and spiral exits with their loads of coal, pieces of coal fell back on to the following carriers. The degrading practice, which entailed long and cruel toil by women and girls in our mines, continued up to as late as 1843. . . . The girls and boys, working from their tenderest years, would haul loads of up to 300 lb. of coal each journey. Bare-footed and almost naked women slaved along the foul, narrow, and ill-ventilated passages of the loathsome mines, hauling the wagons which often had neither wheels nor rails." This is a striking word picture, and, by contrast, it emphasises well how efficient transport has emancipated the workers in the heavy industries.

**A Concise Dictionary of Finance.** By W. Collin Brooks. London: Sir Isaac Pitman & Sons Ltd. 11 in. × 6 in. × 1½ in. 406 pp. Price 12s. 6d. net. —The imposing list of previous books from the pen of Mr. Brooks, given on the dust wrapper of his latest work, together with the information that he is city editor of a well-known Sunday paper and has held like positions in the past with other journals, indicates his suitability to act as guide to the correct meaning of the many terms used in connection with financial transactions of all descriptions. A rapid glance through this dictionary makes one appreciate the unfortunately all-too-common view that finance is a very difficult subject, beyond the understanding of the ordinary man. Mr. Brooks has not been daunted by what must have been a most arduous task, and it is to be hoped that his perseverance will be an example to others who tend to regard the subject as "too complex."

It is hard to resist the temptation, on examining a new dictionary, to try to discover omissions or mistakes in definitions. Mr. Brooks asks to be informed of any, and therefore the following matter is brought to his

attention as one needing correction in the next edition. Under the word "Bank," information is given as to its origin, followed by quotations from various authorities on the functions of such institutions, but not one of these quotations refers to what is, undoubtedly, the most important function of a bank—the creation and withdrawal of credit. This certainly is not a case of "shouting with the largest crowd," for no one to-day denies that the banks create monetary credit, and are alone in their power to do so.

On this matter the dictionary is definitely misleading, for the ordinary reader would gather the impression that banks lend only the money deposited with them, and even if he referred to other headings such as "Credit" and "Loans," this wrong impression would not be corrected. Mr. Brooks might well consider the desirability of quoting H. D. Macleod on this question: "The fact is, that a banker's profits consist exclusively in the profits he can make, by creating and issuing credit in excess of the liquid assets he holds in reserve. . . ."

Apart from the many comparatively lengthy definitions given, the dictionary contains a good list of abbreviations used in finance and commerce, and explanations of the slang and colloquialisms in use on the various exchanges. The book should prove an invaluable source of reference to the busy man and a subject of interest to the student of finance and economics.

**Through Russia by Air.** By John Grierson, R.A.F.O. 1934. London: G. T. Foulis & Co. Ltd., 7, Milford Lane, Strand, W.C.2. 8½ in. × 5½ in. × 1 in. 174 pp. Illustrated. Price 5s. net. —Access to the remote interior of the Soviet Union is still denied to all but the most persistent travellers, so that Mr. Grierson's story of his flight in no way suffers from the lack of novelty which is beginning to threaten narratives of conducted tours to Leningrad and Moscow. His journey to Samarkand, romantic goal of so many possibly more picturesque but less enterprising caravans, was undertaken in a four-year-old light aeroplane, and in addition to bad weather, contradictory maps and the vagaries of Russian aerodrome staffs, he had to contend with periods of ill-health engendered by the climate and the local diet. The restrained but graphic style of his book impresses the reader far more deeply with the merits of his achievement than could any amount of melodramatics. Mr. Grierson goes further than giving merely a traveller's account of his journey, and includes observations on Aeroflot, the Soviet civil air organisation, which are shrewd and illuminating rather than complimentary. He also records witnessing extraordinary traffic activity on the single line of the Moscow-Samara-Tashkent railway route, on one section of which two goods trains were observed approaching each other head on at twenty miles an hour, and half a mile apart.



## THE SCRAP HEAP

"Fire in a railway waiting-room," reads a heading. Purely accidental, of course.—From "The Daily Herald."

\* \* \*

There are two main sorts of businesses—(1) Buying something and making something out of it. This is called Manufacturing; (2) Buying something and making a lot out of it. This is called Retailing. There is a third species known as the Wholesaler or Middleman, which simply buys a thing at one price, puts it in a paper bag, and sells it at another. The Middleman is commonly called a parasite, except on the Stock Exchange, where he is known as a Jobber.—From "How to Run a Bassoon Factory, or Business Explained."

\* \* \*

### SIMPLIFIED SPELLING

Members and friends of the Simplified Spelling Society are asked to use some simplifications in their ordinary correspondence. Use these, because they are simpler and better:—

Altho, ar, bilding, comitee, coud, catalog, corespond, dout, frend, giv, hav, jail, liv, program, shal, shoud, speling, tho, throu, thoro, telefone, telegraf, thruout, woud, wel, wil, &c.

If you do so, it will encourage and quicken the spelling reform which is needed.

Such spelling is not so ugly as our present conventional spelling is.

\* \* \*

Another sidelight on Alfred Owen Williams, the Great Western Railway hammerman to whose career as a classical scholar and poet we referred in an editorial note in THE RAILWAY GAZETTE of April 28, 1933, was thrown recently by Dr. Albert Mansbridge at the British Institute of Adult Education, Oxford. Dr. Mansbridge once visited him in the tiny cottage outside Swindon where he lived with his wife, and after relating some of his accomplishments, such as the publication of two volumes of translations from the Greek and Latin poets, and a knowledge of Sanskrit, Williams confessed that his erudition came to him comparatively late in life, for until the age of twenty he had been interested in little besides football.

\* \* \*

### BY RAIL TO AMERICA

We are apt to think that striking enterprise is the special feature of our own age . . . but a project, still unrealised, of a railway round "the top of the world" with direct overland communication between America and Russia was put forward in the *Railway World* fifty years ago, in August, 1884, by Major W. H. Kent. His scheme for joining up the American and Russian railway systems started at Fort Simpson, on the Mackenzie River, whence a new railway was to be made

following the coast-line of Alaskan territory to Mount St. Elias, a distance of 525 miles. Thence it was to cross the Aleut and Yukon districts 1,000 miles to the shores of the Bering Straits. At the narrowest part of the Straits he claimed that the sea was comparatively free from ice all the year round, and a train could be conveyed across either by ferry or by a series of tunnels, and he pointed out that the widest space between any two islands to the two continents was only a mile and a half.—From the "Manchester Guardian."

\* \* \*

In the State of South Dakota, in 1910, the question of whether railways should be required to use electric headlights was submitted to a referendum of the people! The people, wiser than

the legislators, refused to pass the law. The fact that such a measure could be submitted to a referendum vote illustrates the absurd lengths to which regulation of railways is sometimes carried.—From "The American Transportation Question," by S. O. Dunn.

\* \* \*

An L.N.E.R. engine driver, reports the *Daily Herald*, has been refused the tenancy of a house in Alexandra Park, North London, on the grounds that the neighbours might object to living next door to a uniformed worker. It is not definitely stated whether it is the uniform itself or its implications which alarms the residents, but there is at least one pleasant touch in the story, for the agent of the property involved has told the press that nothing personal is held against the rejected house-hunter since "as he is a railway engine driver he must obviously be a reliable man."

## GREAT WESTERN RAILWAY OF ENGLAND.

The most Picturesque Route between  
Liverpool and London.

PASSENGERS TO AND FROM AMERICA HAVE THE CHOICE OF

### THREE ROUTES:

- 1.—THE ROYAL (OXFORD) ROUTE.
- 2.—THE WORCESTER ROUTE.
- 3.—THE HEREFORD AND GLOUCESTER ROUTE.

The Railway passes through some of the MOST PICTURESQUE SCENERY IN THE COUNTRY, while the Historical Associations connected with many of the Towns are of the greatest interest.

THE FOLLOWING ARE SOME OF THE PLACES WHICH CAN BE  
VISITED EN ROUTE.

**CHESTER.**—One of the most Ancient Cities in England.

**SHREWSBURY.**—Rich in Antiquarian Interest.

**STRATFORD-ON-AVON.**—Shakespeare's Birthplace.

**WARWICK.**—For Warwick Castle.

**LEAMINGTON.**—The Celebrated Watering Place.—For Kenilworth Castle and Guy's Cliff.

**FENNY-COMPTON.**—Near the Battle-field of Edge Hill: and Sulgrave, the Ancestral Home of Washington.

**OXFORD.**—The City of Colleges.

**WINDSOR CASTLE.**—The Home of the Queen.

**SLOUGH.**—For Stoke Park, which belonged to William Penn, the founder of Pennsylvania, United States.

BAGGAGE CHECKED THROUGH between LONDON and LIVERPOOL, saving Passengers all trouble.

LUNCHEON BASKETS and FOLDING TABLES, PRIVATE OMNIBUSES, SALOON and LAVATORY CARRIAGES, and every facility provided for the Travelling Public.

Tickets may be obtained at the Great Western Office, James Street, Liverpool, the Railway Office on the Landing Stage and at the Birkenhead (Woodside) Station at the following rates: First Class, 29/-; Second Class, 21/6; Third Class, 16/6. Passengers should be careful to ask for "Great Western Tickets." The tickets are available for ten days.

Time-Books, Maps, etc. are supplied to the Steamships running between England and America, and they will be forwarded, free of charge, to any part of America, to all persons applying for the same to the undersigned, of whom full particulars as to trains, fares, and other arrangements may be obtained.

Paddington Station, London.  
May, 1894.

H. Y. LAMBERT, General Manager.

FORTY YEARS AGO—A G.W.R. advertisement in an American travellers' guide published in 1894

## OVERSEAS RAILWAY AFFAIRS

(From our special correspondents)

*Railway requirements of Southern India — Railcar developments in France—State Railways absorb Chilean Transandine system—Co-ordinated tourist activities in New Zealand—New short-cut between Aosta and Milan and simplified Italian fares—Public opinion and the Swiss railways' reorganisation*

### INDIA

#### Flood Damage

In an official statement on the floods that occurred in Behar during the last week of August, the Hon. Mr. Whitby said that in the Saran district the whole area from Goldenganj to Sonapur between the B. & N.W. Railway embankment and the Ganges was under water. The damage to the railway was very serious, and one of the breaches was reported to be 450 ft. wide. This might take some weeks to repair.

In Bengal, flooding of the Bhagirathi River washed away a bridge between Rejinagar and Beldanga on the Murshedabad section of the Eastern Bengal Railway, rendering through connection impossible. Subsequently, the railway arranged for the transhipment of passengers and luggage across the breach in boats, but to avoid interrupting the repair works, this was restricted to four trains only. It is expected that through running will be restored in a few days.

#### Noteworthy Bridge Repairs Necessitated by Earthquake

Accompanying the description of the Behar earthquake damage and repairs in THE RAILWAY GAZETTE of June 29 last was an illustration showing the damage done to the Inchcape Bridge across the Gogra river. Of the 18 spans, two, each of them 200 ft. long, were, it may be remembered, shaken off their piers, the girders falling into the river bed and being seriously distorted. In order to restore communications it was absolutely essential that these two spans should be replaced before the rise of the river, caused by melting snow in the Himalayas and the break of the monsoon. Time did not therefore permit of new girders being fabricated, but instead the wrecked girders were carefully inspected and the damaged sections of one span were replaced by corresponding members from the other, so that one complete span was made up in good condition and again used for carrying the traffic. For the second span, girders from another damaged bridge were used. Before the reconstructed spans were brought into use they were subjected to severe tests and found to be quite satisfactory.

At another bridge over the Dhanauti,

near Motihari, which was completely destroyed, the piers were replaced by cylinders of the screw piling type, these being helically driven by electric capstans until they had gone down about 70 ft. below the river bed. These two bridges were the last links required to re-establish rail communication between Benares and Chupra.

#### Puja Bazar Special

The Puja and Winter Bazar Specials are annual features on the Eastern Bengal Railway which the manufacturing and trading interests in Calcutta look forward to as a medium of contact with their up-country customers. The Puja Bazar Special will be on tour from September 6 to October 7 and will visit 30 principal broad and metre gauge stations. The train will be open to the public daily from 7.30 a.m. to 11 a.m. and from 1 p.m. to 7 p.m. The cinema car of the railway will accompany the train and, weather permitting, cinema exhibitions will be given in the evening. The space available in the train for the exhibition of goods has been fully booked.

#### Railway Problems Discussed

At a meeting between the Chief Commissioner and Financial Commissioner of Railways and the South Indian Chamber of Commerce, the attention of the Railway Board was directed to the need for railway development in areas where no practicable roads existed. The chamber thought that a connection between Mysore and Coimbatore and the west coast was worth examining. The conversion of the Ernakulam-Shoranur railway to broad gauge was a part of the great scheme for the development of the Cochin harbour, but the chamber considered that the transport requirements of Southern India called for a metre gauge connection between Cochin and the South Indian Railway.

Reference was made to conversions of track to metre gauge in certain places. There was, however, a small broad gauge section of 191 miles between Khandwa and Manmad, on the G.I.P., which separated the metre gauge sections to the north and south. An alternative metre gauge line between these stations would permit through transport of wagons from Delhi to Rameswaram in the extreme south.

As to the Indian Railways Act, cer-

tain sections required urgent revision. The chamber asked for the publication of the proposals drawn up by the late Sir B. N. Sarma and for an amending bill to be drafted without delay. The necessity of amending risk note forms so as to place upon the railways the burden of proof that loss or damage to consignments was not caused by misconduct on the part of railway servants was also urged.

Discussing the question of grouping, Sir Guthrie Russell observed that the main difficulty lay in the existence of agreement with certain companies which would expire at different times. The earliest possibility of regrouping was in the case of the B.B. & C.I. and the G.I.P. Railways. Next would be the M. & S.M. and the S.I. Railways.

### FRANCE

#### More Railcar Services on the Etat

Two Bugatti railcar services are now in operation each way daily between Paris, Rouen and Havre. The times have been selected to supplement the existing fast train services and it is expected that the facilities offered by the cars will be much appreciated by business men travelling between these important trade centres. The journey from Paris to Havre 228 km. (141.4 miles) will be completed in 2 hr. 10 min., giving an average speed of 105 km. (65.2 m.) p.h. including the Rouen stop. The first service, leaving Paris at 10.5 a.m. and Rouen at 11.25, arrives at Havre at 12.15 p.m. On the return journey, Havre is left at 12.50 p.m., Rouen at 1.40 and Paris reached at 3 p.m. The second departure from Paris is at 3.20 p.m. and Rouen at 4.40, and the arrival at Havre is at 5.30. On the return, Havre is left at 9.45 p.m., Rouen at 10.35 and Paris reached at 11.55.

Additional railcar services have also been arranged by the State Railways for the Rouen-Havre area. Beginning on October 7, a railcar will be run between Rouen and Havre with stops at Barentin, Yvetot and Bréauté-Beuzeville. The first run will be in the morning, starting from Rouen at 7.15 and reaching Havre at 8.21. Returning from Havre at 8.40, the car is due at Rouen at 9.54. The second run starts from Rouen in the afternoon at 1.20, the car reaching Havre at 2.26. Returning from Havre at 3.25, it arrives in Rouen at 4.29. Among the advantages offered by these services is the possibility of passengers from Havre catching the Channel-Ocean express at Rouen for Nantes, Bordeaux, Biarritz and the Spanish frontier, thus saving 1 hr. 16 min. on the present train times.

Another railcar service, between Chartres and Rouen, is scheduled to begin on October 7. Leaving Chartres at 8.20 a.m., the car will arrive at Rouen at 10.57. On the return journey, it leaves Rouen at 4.12 p.m. and reaches Chartres at 6.47. The car will give connections at Chartres for

trains to Orleans. It will thus be possible to go from Orleans to Rouen and return the same day after a stay of more than five hours in the Normandy capital.

#### Localised Half-Fare Voucher Cards

In an effort to encourage travel in the Paris area, the State Railways are issuing cards, valid for one year and giving the right to travel at half-fare between Paris and stations situated within a radius of 100 km. (62½ miles) from the capital. The price of the card varies with the distance, but for 30 km. (18½ miles) the charges are 126 fr. 15 c. first class; 99 fr. 10 c. second class; and 67 fr. 60 c. third class. At this distance the cost of the card is completely covered in 19 return journeys. After the 19th journey, the passenger has the entire benefit of a 50 per cent. reduction of the fare. The cards are available by all trains and reductions in the cost are allowed when two or more cards are issued to members of the same family.

A similar system of cards giving the right to travel at half-fare between all stations in the same department of France has been instituted by an agreement between the State Railways, the Paris, Lyons & Mediterranean Railway and the Paris-Orleans-Midi Railways. This agreement covers the greater part of France as it includes 72 out of about 90 departments in the country. The cards are valid for six months or one year and reductions in the cost are allowed when two or more cards are issued to associates, managers and directors of the same business firm or company. The reduction varies from 10 per cent. for two cards, to 25 per cent. for five or more cards.

#### Inland Waterways-Rail Committee

A committee for the co-ordination of transport by rail and inland waterways has been formed and announced by a decree published in the *Journal Officiel*. The Minister of Public Works will draw up a list of the recognised waterway transport concerns, who are asked to nominate an expert to serve on the committee. In default of an agreement between the transporters in the allotted time, the Minister himself will name the expert. Seven regional commissions will be formed to organise the co-ordination. Contractors or bargemen in charge of boats transporting goods must keep a register of all voyages and of the tonnage of goods transported under the authorisation.

Some opposition to the proposed rail and road co-ordination in the Rouen-Havre area was evinced at a recent meeting of the general council of the Seine-Inférieure Department. A number of members were in favour of rejecting the plan, but the report of the special commission, which had considered the question, was adopted by a large majority. This, however, recommended that the co-ordination plan should not be made effective until the business, industrial, agricultural and tourist interests had been consulted.

## BRAZIL

### E.F. Central do Brasil

Sundry timetable modifications were introduced in September, mainly in connection with the day expresses between Rio and São Paulo, which were accelerated in March this year, but which now, with the imposition of various speed restrictions on this route, have been slowed down to the extent of 40 minutes in each direction. The night trains remain unaltered, likewise the day and night services between Rio and Bello Horizonte. The insertion in the working timetables of special paths for the running of relief trains in advance of the ordinary day services on the São Paulo route, as between Rio and Cruzeiro, is an innovation. These reliefs will be run when required to accommodate passengers travelling between the federal capital and the hydropathic resorts such as Caxambú, São Lourenço, Aguas Virtuosas and others situated on the Rêde Mineira de Viação, for which Cruzeiro is the junction.

## CHILE

### Subsidy for Arica-La Paz Railway

As the result of a conference between the Chilean Ministers of Finance and Production and the General Manager of the Arica-La Paz Railway, a subsidy of 700,000 Chilean pesos (approximately equivalent at current exchange rates to £15,000) has been paid to the above line. The greater part of the grant is intended to be used in the payment of salaries and wages of employees and workmen of the railway who would have been dismissed during the period of business depression, but were retained at the request of the Government.

### Transfer of Chilean Transandine Railway

According to information from Santiago-de-Chile, the entire administration of the Chilean section of the Transandine Railway has been transferred to the State Railway system. When the Transandine Railway was reopened in December, 1932, after having been closed for some months, the agreement made between the Chilean and Argentine Governments stipulated that each section of the line should be responsible for its own management for two years, after which the two sections should be placed under a joint administration as before, unless some other arrangement should have been decided upon. The Chilean Government's decision to incorporate the line in the national railway system is in accordance with its policy of extending state ownership of industrial concerns.

The combined rail and motor car service between Chile and Argentina (announced in THE RAILWAY GAZETTE of August 31) came into operation on August 29, when the first train left Santiago de Chile for Los Andes and

Punta de Vacas. From the latter point, which is in Argentine territory, the trip was continued by motor car to Mendoza, where the passengers transferred to the B.A. and Pacific Railway for Buenos Aires.

## NEW ZEALAND

### Developing Tourist Industry

The Chairman of the Government Railways Board, Mr. H. H. Sterling, has taken a most active personal interest in a new drive now being made in this Dominion for a larger share of the world's tourist traffic. As a result, over 60 delegates from all parts of the country were present last week at a conference called by the Minister in Charge of Tourist and Publicity. A resolution was adopted to recommend to the Government that the State and private interests involved in tourist and publicity matters in New Zealand be co-ordinated, first, by placing the Tourist Department under the control of a board separated from the Public Service, and then by developing all the interests affected for the purpose of bringing tourists to and caring for them in New Zealand.

### Road v. Rail

An acute stage has been reached in the effort to produce effective co-ordination of goods transport services. In submitting to the Transport Licensing Authorities objections to road services operating in opposition to the railway, the Railway Department contended that it should not be expected to carry the cheaper form of traffic while some of the higher-priced goods went by road. If the road services were to continue, road hauliers should be prepared to carry all classes of traffic and not be allowed to reject that for which the railway charges lower rates. Mr. H. Valentine, Chief Accountant of the New Zealand Railways—who was this year elected to the Chairmanship of the N.Z. Accountants Society—has shown that the road hauliers confine their loads to goods which can bear higher freight rates, and reject some agricultural and most mineral and forestry products, together constituting 60 per cent. of the total business. Loss to the railways of the cream of the traffic has forced on the department the retention of rates on the remaining 60 per cent., at the highest possible levels.

### Economical Buying

Objections raised recently to the methods of purchase adopted by the railways of supplies from Great Britain have revealed the efforts of the Railways Board to secure the best service at the lowest price. It has now been stated that the department is compelled to reserve the right to purchase in the most favourable market, and that accordingly the High Commissioner had for many years arranged for the purchase of certain goods, machinery, &c., for the department.



For example, the recent purchase of twist drills was made for reasons of economy through the High Commissioner. Before deciding to do this, however, and in consideration of the department's future requirements, arrangements had been made to give the New Zealand vendors reasonable notice of the proposal, in order that they might regulate their indent orders. To assist further, arrangements had been made for the delivery of the first order to be delayed until January, when the vendors would have had six months to reduce stocks imported in anticipation of the department's requirements. If, after the arrival of the drills now on order, it was ascertained that any of the agents held stocks of departmental sizes, the question of negotiating with the agents for the purchase of such drills would be favourably considered.

#### Railway Road Passenger Service

The first long-distance road service undertaken by the railways will commence operations on September 1 between Wellington and Wanganui—a distance of 139 miles by road and 150 miles by rail. The railways bought out the road competitor holding the sole licence for running on this route. By economies in operation made possible through the department's previous experience, and also by the co-ordination of train and motor times, the new road service should be reasonably profitable from the start, although the former owners had not been successful. Many of the vehicles taken over do not conform to the requirements of the route, which calls for four services each way daily, and the railways are expected to introduce many improvements for the comfort, safety and convenience of passengers on this road.

#### Coaching Vehicle Conversions

Innovations involving the reconstruction of a number of railway cars, for the benefit of passengers and at the same time to economise on haulage, have recently been taken in hand by the department. To obviate the haulage of a complete sleeping car on the New Plymouth express at times when only a few passengers have booked sleeping berths, a 20-berth car has been reconstructed and now contains one two-berth and two four-berth cabins, and seating accommodation for 12 persons. The work was carried out at the Otahuhu (Auckland) railway workshops, and four other cars are being similarly remodelled for use in the North Island. Considerable economy in haulage will result in running the new cars over the heavy grades on the New Plymouth line. Another use to which they will be put is in catering for special parties of travellers. It is intended to replace the 20-berth sleepers on the Limited express with de luxe sleepers, and the new type of converted car will not be used on this train. Several day cars are also being converted into passenger-brake composites on grounds of economy.

## ITALY

### Purchase of Tickets in Germany

The Italian Government has made an arrangement with Germany respecting tourist traffic to Italy, on similar lines to that made a short time ago with Austria (see THE RAILWAY GAZETTE of July 13 last). Hotel coupons and cash coupons available in Italy can now be purchased in Germany on payment of their value in marks.

### Improving Communications with the Aosta Valley

A new company has been formed for the construction and working of a standard gauge railway between Ivrea and Santhià (Piedmont). Although the new line is only about 30 km. long it is likely to become of considerable importance to the general development of the Aosta Valley and the whole province, as it will shorten the distance between Aosta and Milan by 40 km. At the present time the State Railway line runs from Aosta southwards, via Ivrea, to Chivasso, and in order to proceed to Milan it is necessary to travel northwards again from Chivasso to Santhià. The new line will form the base of the triangle joining, Ivrea-Chivasso-Santhià. The Val d'Aosta combines natural beauty with considerable mineral and agricultural productivity.

### Revised Fare Concessions

The Italian Cabinet has approved a series of new and simplified bye-laws for the transport of passengers and luggage on the State Railways. These have been worked out so as to conform with the regulations laid down by the C.I.V. (whose last meeting in Rome we reported in THE RAILWAY GAZETTE of January 5 last). In this way the internal passenger regulations are now the same as those in force for international traffic.

The following are the principal articles of the new bye-laws:—

(1) The validity of return tickets issued with a reduction of 20 per cent. has been increased from 100 km. to 250 km. It is estimated that the actual loss of about 7 million lire (£140,000) will be balanced by increased traffic on routes where road competition has previously been severe.

(2) The existing special concessions for week-end journeys of 250 km. and under (50 per cent. for individuals and 70 per cent. for parties within 250 km.) will become permanent. The same applies to the special reductions for market tickets to destinations within 100 km. granted a few months ago (see THE RAILWAY GAZETTE of June 22 last). Considerable increase in traffic had been derived from both concessions before they were revised.

(3) An important concession is made for party travel. At present the minimum number of passengers is fixed at 20 and the fare reduction amounts to 30 per cent., whereas under the new tariff the minimum number has been reduced to eight, and the reduction has been graduated as follows: 30 per cent. for groups of 8 to 50, 40 per cent. from 50 to 100, and 50 per cent. from 100 upwards.

(4) Commercial travellers will benefit in future by a reduction of 30 per cent. on the cost of vouchers entitling the owner to a reduction of 50 per cent. on all tickets. Such vouchers are available for 3, 6 or 12 months, either for distances up to 100 km., or for unlimited travel.

The prices vary accordingly and also differ for the three classes. A voucher to travel first class, without distance limit, costs 546 lire (about £9 14s.) for 3 months, 956 lire (about £17) for 6 months, and 1,774 lire (£31 12s.) for 12 months.

Another important reduction is that of 10 per cent. in all season tickets available for the entire State Railway system. These tickets are issued for a period of from 1 to 12 months. A first class monthly season costs 2,002 lire (£35 15s.), second class, lire 1,356 (£24 4s.), and third class lire 804 (£14 7s.). A progressively decreasing rate is applied for each further month: e.g., 6 months' tickets cost £123 16s., £83 6s. and £49 respectively, whilst those for 12 months are as low as £230, £157 12s. and £90 6s. The reductions would mean at present a loss of 2 million lire, but it is expected that increased traffic will compensate for this.

(5) In order to bring the new bye-laws into conformity with international agreements, the age limit for the free conveyance of children has been raised from 3 to 4 years, and the half-fare age has been raised from 7 to 10 years.

(6) The special weekly season tickets which are now available for workmen and clerks will, in future, be extended to students, and reductions for student party travel will be increased from 30 to 50 per cent.

(7) In place of the existing holiday travel facilities for families, the new regulations institute a permanent reduction of 50 per cent. for any journey throughout the year by families of 4 members and over.

(8) The existing eight categories of luggage have been abolished and there will now be only two in the future: one for personal articles and the second for all other classes. Rates have been reduced by about 20 per cent. throughout.

### Italian Railcar in the U.S.S.R.

At the invitation of the Soviet authorities, a Fiat Littorina railcar has arrived in Moscow after having travelled through Austria, Czechoslovakia and Poland. The railcar was in charge of Fiat mechanics and accompanied by several engineers of the company. At the Russian frontier wheels had to be changed on account of the different gauge in the U.S.S.R. The railcar travelled to Moscow, attaining in many places a speed of 135 km.p.h. The vehicle is now being tested on the Russian lines.

## SWITZERLAND

### Approval of the New Reorganisation Scheme

The scheme described on page 105 in THE RAILWAY GAZETTE of July 20, for the reorganisation and assistance of the Swiss Federal Railways has now been examined by a special commission of the Farmers, Artisans and Bourgeois Parliamentary Party in the Federal Assembly, under the chairmanship of a national councillor. The commission approved of the project in principle, but expressed the opinion that suitable measures should be taken to prevent the Federal Railways from relapsing in future into a situation similar to that at present obtaining. Moreover, the commission considered that provision should be made for the railways improving to a greater extent than was now anticipated, to cover which contingency a limitation should be placed on the amount of State aid afforded. Finally, the commission wished similar reorganisation and assistance to be applied to the principal private railway companies in this country.

## NEW THREE-CYLINDER 4-8-2 EXPRESS LOCOMOTIVE, CZECHOSLOVAK STATE RAILWAYS

*These engines have been introduced for working the heaviest express trains on steeply graded sections of the main lines*

A NEW type of powerful express locomotive has recently been introduced on the State Railways of Czechoslovakia, having the 4-8-2 wheel arrangement and three single-expansion cylinders, and by courtesy of Ing. Karel Fasse, Chief of the Rolling Stock Department, we are enabled to reproduce a dimensioned drawing and photograph of the first of the new series. Locomotives of a more powerful type were required for working express trains over the heavily graded sections of the State Railway system, and the demand was for an engine capable of developing a high tractive effort and rapid acceleration rather than one having the ability to run at extra fast speeds. Consideration has also been given to the matter of flexibility on curves and, although the engine has four coupled axles, the rigid wheelbase is restricted to 19 ft. in relation to a total wheelbase of 42 ft., it being desired that curves having a radius of 490 ft. could be traversed without difficulty. The bogie is designed for a side play of  $3\frac{1}{8}$  in. on either side and a pressure of 4,000 kg. is utilised for keeping it central; with the maximum displacement the centering force is 7,000 kg. The flanges of the first and last pairs of coupled wheels are turned  $\frac{7}{8}$  in. under size, while those of the two intermediate pairs of coupled wheels are reduced by  $\frac{3}{8}$  in. A similar amount of flexibility is imparted to the trailing axle as in the case of the leading bogie.

The three cylinders are arranged so that those outside are horizontal and the inside one is inclined at 1 in 10. The cylinders are cast of vanadium steel with cast iron bushes, and have bye-pass valves of the poppet type which are automatically closed when the regulator is open. Steam distribution is effected by Walschaert type valve motion with inside admission, and each piston valve is operated by a separate set of valve gearing.

The piston valve bodies are constructed of steel and fitted with narrow cast iron rings and the links are suspended on S.K.F. roller and ball bearings. Return cranks attached to the main crank pins are utilised in the ordinary way for the valves of the outside cylinders, whilst that of the inside cylinder is actuated by a return crank attached to the outside crank pin of the third pair of coupled wheels on the left hand side of the engine. The transmission shaft is carried in two bearings and transmits the motion to the inner link, and all three die blocks are actuated by one reversing shaft carried in three bearings.

The boiler has an external diameter of 6 ft. 0 $\frac{7}{8}$  in. and carries a working pressure of 227 lb. per sq. in. It is fitted with a superheater having 35 elements, and the distance between the tube plates is 19 ft. 8 in. The 35 smoke tubes have a diameter of 6 in. and there are 126 fire tubes 2 $\frac{1}{4}$  in. diameter. The grate area is 52 sq. ft. The grate is provided with a drop section, counterbalanced by a spring, and the grate bars, which are of iron, are subjected to an aluminium treatment to increase their heat resisting qualities.

The engine in working order weighs 102 $\frac{1}{4}$  tons and when empty 93 $\frac{1}{4}$  tons. The "normal" adhesion weight is 63.85 tons, but this can be increased to about 70 tons by an arrangement which permits of altering the equalisers. The springs of the coupled axles and those of the bogie are compensated and arranged so that the engine has three-point suspension. The sandbox is incorporated with

the dome casing and compressed air is used for propelling the sand to the rails in front of each of the first three pairs of coupled wheels. The engine is fitted with Westinghouse air brake with Nielebock-Knorr compressor, the brake being applied on the front of all coupled wheels. The fittings include an exhaust steam injector, a non-lifting injector, and a Haushalter-Teloc speed indicator. There is a 350-watt turbo-generator on the top of the boiler for supplying current for the head lamps, for lighting the cab, water gauges &c., and for illuminating the valve motion for inspection purposes.

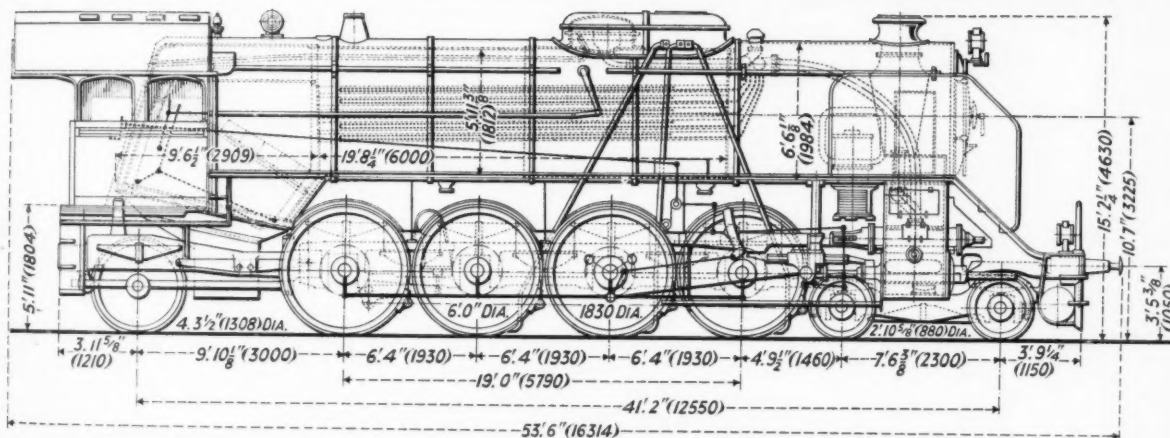
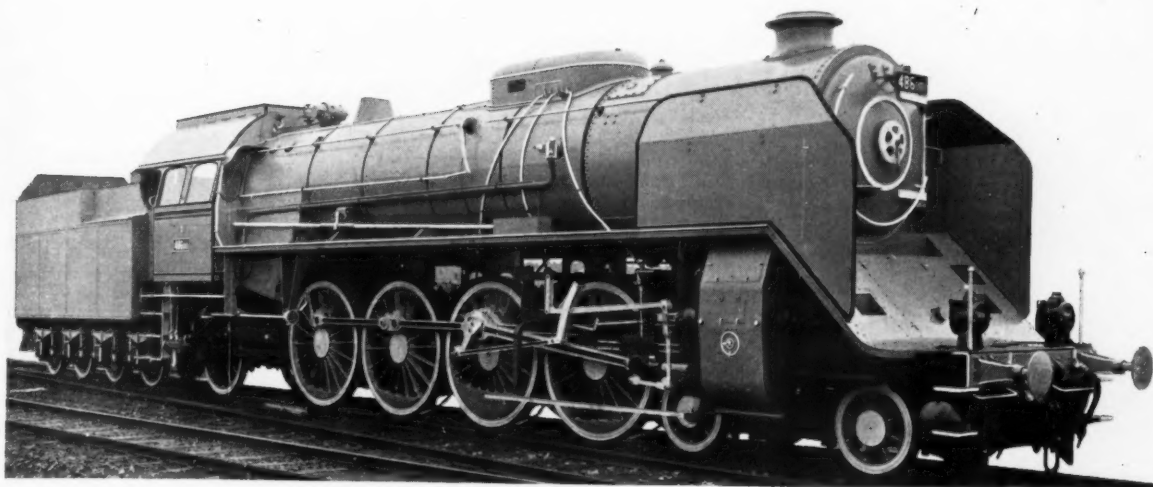
The following are the principal particulars—

Cylinders (3) diameter .. .. .	21 $\frac{1}{2}$ in.
Piston stroke .. .. .	26 $\frac{3}{4}$ in.
Wheels, coupled, diameter .. .. .	6 ft. 0 $\frac{1}{2}$ in.
.. leading bogie, diameter .. .. .	2 ft. 10 $\frac{1}{2}$ in.
.. trailing diameter .. .. .	4 ft. 3 $\frac{1}{2}$ in.
Wheelbase, engine .. .. .	42 ft. 0 in.
Wheelbase, rigid .. .. .	19 ft. 0 in.
Boiler working pressure .. .. .	227 lb. per sq. in.
Heating surface:—firebox and arch tubes .. .. .	213.5 sq. ft.
Tubes .. .. .	2,529.6 "
Total .. .. .	2,743.1 "
Superheater .. .. .	968.7 "
Combined total .. .. .	3,711.8 "
Grate area .. .. .	52 "

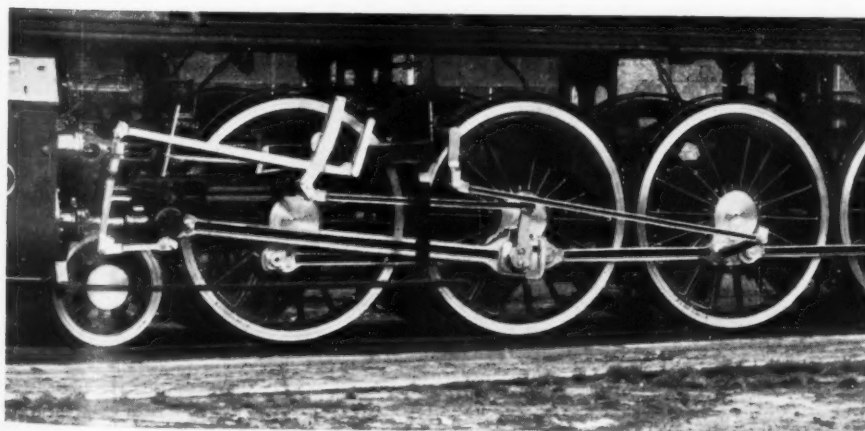
The tender, of standard Czechoslovak State Railway design, runs on eight wheels. The locomotive, which was manufactured by the Skoda Works at Pilsen, presents a very fine appearance, as we are able to testify, having recently had the opportunity of inspecting it at the Wilson station in Prague.

### Non-Stop "Perishable" Trains

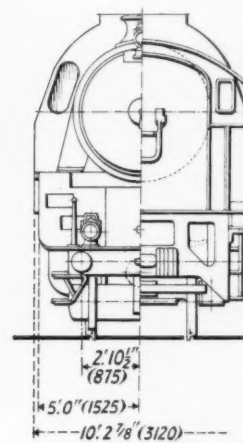
In the period April 27-May 22 of the present year 124 fruit carrying trains were run a distance of 104 miles on the Richmond, Fredericksburg & Potomac Railway on an average timing of 3 hr. 15 min., the number of perishable trains worked on the system during the first six months of 1934 being 1,033 and the average timing 3 hr. 45 min. For many years it was considered impossible to run freight trains from one end of the railway to the other on a non-stop basis as a daily operating practice, as many factors such as the heavy passenger traffic and the necessity for water stops, interfered with such a programme. With improved signalling, including automatic train control it has, however, been found possible to make such runs safely and without undue hindrance to passenger trains. All freight trains are run as extras and there are many stretches where they are permitted to run on signal indication only. The 4-8-2 locomotives used for the work were purchased several years back but they have been modernised by the addition of automatic stokers, boosters, feedwater heaters, thermic syphons, and other aims to efficient operation. The freight engines average 4,500 and the passenger engines 7,500 miles a month, these creditable mileages being attributable to the careful study made of locomotive utilisation and to running the engines at consistent speeds, which has had the effect of reducing the amount of shop attention required.



Dimensional drawing and three-quarter view of new locomotive



A separate return crank on the third pair of coupled wheels is used for the inside cylinder piston valve



Combined end views

NEW THREE-CYLINDER 4-8-2 EXPRESS LOCOMOTIVE, CZECHOSLOVAK STATE RAILWAYS  
(See article on facing page)



## A NORWEGIAN POWER SIGNALLING INSTALLATION

### *Signalling at Oslo East station, Norwegian State Railways\**

**T**HE first mechanical signalling plant at the East station, Oslo, was constructed in 1901, by Siemens and Halske, to control a certain number of points in the yard and the home and starting signals for the three single lines which at that time terminated there.

frames to the extent required. The possibility of an all-electric power cabin was therefore investigated and adopted, but as it was necessary to make some improvement in the situation before the time necessary for the completion of so large a scheme, an

electro-mechanical arrangement was provisionally adopted. Accordingly, in 1925, the mechanical signals were abolished and replaced by colour lights operated from a small power frame placed in cabin No. 2, thus enabling the levers formerly used to work the signals to be used to operate additional pairs of points. Fig. 2 shows the interior of the cabin after the change had been made. The repeater indicators for the colour light signals can be seen on the white panel at the back of the electric frame.

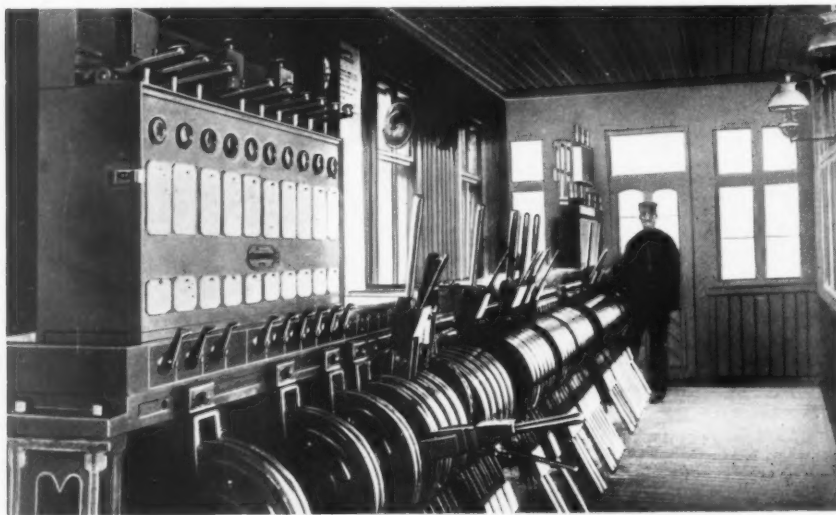


Fig. 1—Interior of first signal cabin at Oslo

This covered only half the operations of the station, the western half of the layout still being operated by ground levers until 1904, when a second signal cabin was erected to control the movements therein. Both cabins were in electrical communication with the supervisor's office in the station, whence the whole of the traffic movements were directed. A little later a third cabin was built, a short distance out, to deal with the connections to the Loenga goods yard. Fig. 1 shows the interior of the first cabin installed, and it will be seen that both points and signals were worked by double wires with a lever frame of the type developed by Siemens and Halske. The block apparatus and miniature handles for interlocking it with the levers are seen on the left of the picture.

In the course of time the accommodation at the station was found to be insufficient for the constantly increasing traffic, and more signalling equipment had to be provided. There was practically no room to add more mechanical levers to the existing

the same as in the mechanical installations and followed German principles, point indicators being used without ground signals. At Oslo a radical departure was made from the existing practice in order to facilitate shunting operations. These are numerous

### Power Signalling Adopted

The decision to adopt power signalling having been taken, the order was given to the Allgemeine Elektrizitäts Gesellschaft. There were already some small power installations on the line, as at Roa and Tøyen, for example, but there the system of signalling was

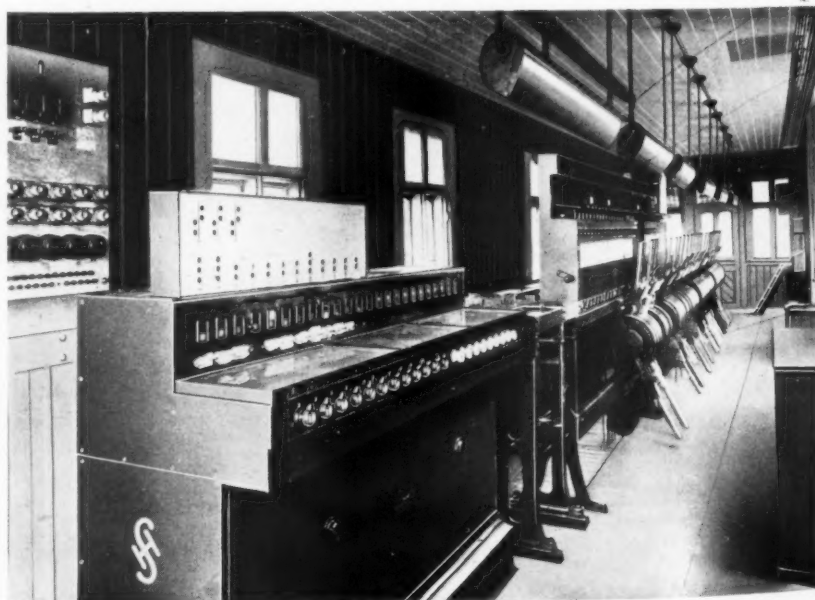
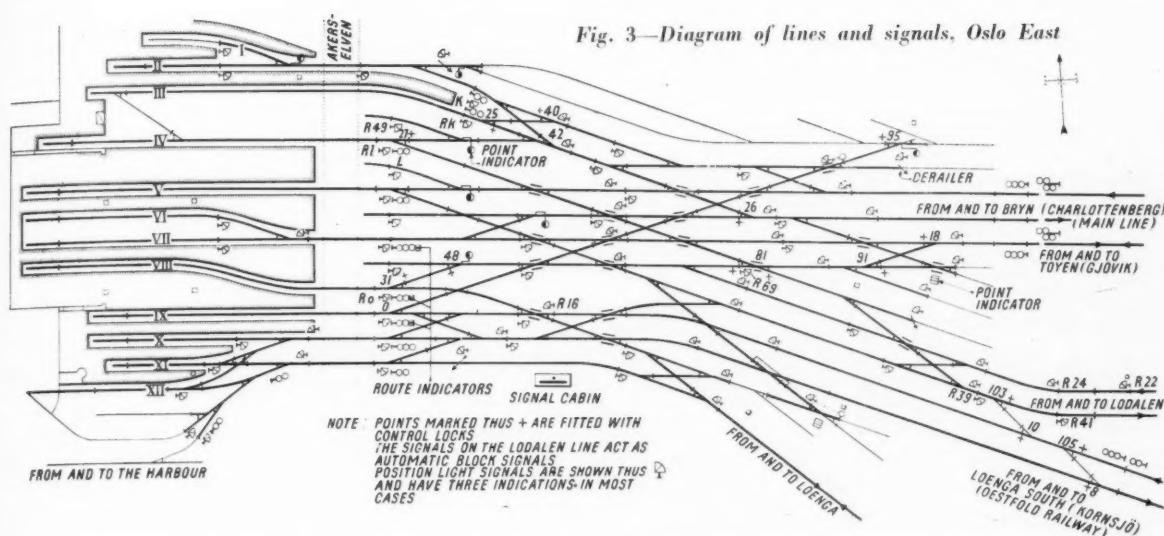


Fig. 2—Interior of cabin after alterations, showing electro-mechanical systems

\* Summary of an article in *Zeitschrift für das gesamte Eisenbahn-Sicherungs-wesen*, by Herr J. Lindbee, Signal Engineer of the Norwegian State Railways.



and complicated at the East station, owing to the store and customs sheds being on the north and the quay and harbour lines on the south of the yard. Most shunting movements, therefore, cross all the regular train paths. It was felt that it would lead to much quicker working if shunting signals were provided for every movement and the whole working directed from the signal cabin, as in British and American practice. This meant that the interlocking in the frame would have to be much more elaborate than had been usual in Norway, owing to the conditional combinations that would be required and which are practically unknown in the ordinary German system.

Fig. 3 is a diagram of the final layout, and it will be seen that only the platform starting and the home and distant signals are colour lights. The shunting signals are of the position-light type, as in the installation at Gothenburg, Sweden, described in our issue of September 1, 1933. The two types of signal are worked in combination for running movements, all the shunts in a route taking up the 90 deg. position when the running signal concerned is cleared. The entire layout is track circuited with a.c. track circuits, of which there are 90, and full point and sectional route locking is installed, allowing the maximum freedom of movement, of which the signalmen have not been slow to take advantage. During fog, which is experienced at certain times of the year and is occasionally quite dense, the control of all movements from the cabin has been found of great advantage in eliminating delays.

There are 269 possible movements signalled, of which 178 are shunts. The ordinary daily train movements number 178, and there are usually about 270 shunting movements, of which 140 cross all running lines. Route indicators are provided on the platform starting signals, and the double line to Lodalén, which runs through a tunnel and leads to the steam locomotive sheds, is block signalled automatically by means of position-light ground signals. It was found that the adoption of these arrangements made the cost of the installation about 20 per cent. above that for one constructed on the older system, but that a saving in

operating costs could be effected, as at least one signalman fewer in each shift would be required.

The signal cabin has three floors. The ground floor contains the rotary converters for charging an accumulator battery for the 30 volt d.c. control current, certain switch gear and the transformers for supplying the remaining signalling circuits, such as the automatic change-over apparatus for connecting to the Oslo electricity works supply in an emergency. The first floor is mainly occupied by the relay room, with 100 a.c. motor track relays, 85 d.c. auxiliary relays working in connection therewith, 158 point detection relays, 165 d.c. relays for signal controls, with 27 auxiliary thereto, and 8 other relays for block interlocking and special purposes, making 543 in all. There are 39 transformers used in connection with the illuminated diagram. The traffic supervisor is stationed in the top storey, with necessary telephone apparatus, alongside the locking frame. The latter is of the miniature lever type and has space for 150 levers and 160 locking bars. There are at present 48 signal, 74 point and derailer levers, 1 bolt lever and 1 section block lever, the last named not being actually in use yet. Lamp repeaters are provided behind each point lever and on the diagram for the signals. There are also route checking

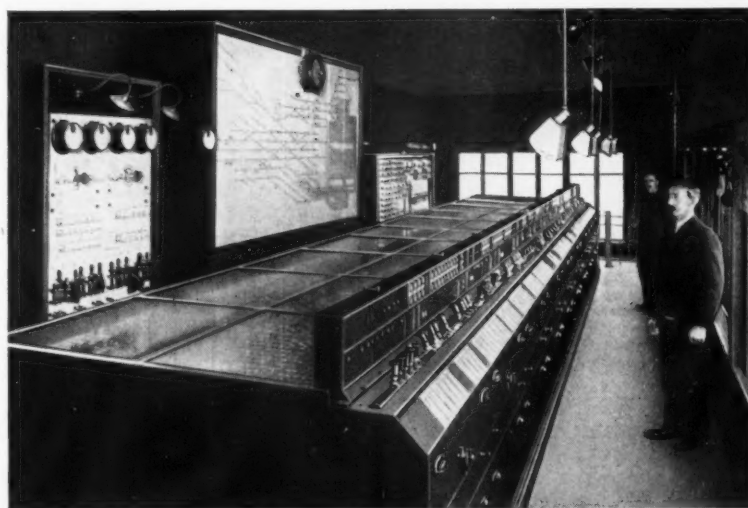


Fig. 4—Interior of existing signal cabin

lights, coloured blue, on the signal diagram, to enable the signalmen to tell at a glance whether they have set the road to the platform intended.

The points are operated by machines with internal trailable hook-locking, mounted on Norwegian State Railways standard fixings. The track relays are fitted with the constant return current action used for a long time past in Norway and considered to give additional safety by improving the drop-away action. All track circuits are of the single rail type. The position-light shunt signals are raised on short posts, as seen in Fig. 5, on account of the heavy snow falls experienced. Each has four 20 watt 55 volt lamps, burning at 50 volts by day and 30 by night. Signals at 90 deg. return automatically to 45 deg. directly the last wheel of a train passes them and the sectional route locking is released.

For the red lights in the home signals and the distant

signal lights, which are double, as in Germany, flashing lights are used, all other indications being given by steady lights. Lamps in home signals are 40 watt and in the other colour lights 20 watt, normally burning at 9 volts, but the intensity is reduced at night to eliminate glare, which has been found to trouble the drivers. No special arrangements are made, by means of reserve lamps or other methods, to meet the risk of lamps burning out, as the experience of nine years on the Norwegian State Railways, with now over 500 colour light signals, has convinced the management that this risk can be regarded as negligible.

The installation at Oslo has now been in service for over four and a half years and is reported to have given entire satisfaction. The traffic department has found the facilities given by the use of the shunting signals to be exceedingly useful.



Fig. 5—View of lines, showing cabin and the position-light signals

## APPLICATION OF STREET TRAFFIC LIGHTS TO RAILWAY CROSSINGS

*An interesting arrangement of power-operated level crossing gates combined with street traffic signals installed at Walton Street, Hull, North Eastern Area, L.N.E.R., believed to be the first of its kind in England*

**A**N interesting signalling installation has just been completed on the North Eastern Area of the L.N.E.R. at Walton Street level crossing, Hull. The road traffic on this crossing, which is on a main approach to the city, has of late years become very heavy and fast, so that the signalman has been unable, without assistance from a groundman, to control the traffic and operate the level crossing gates.

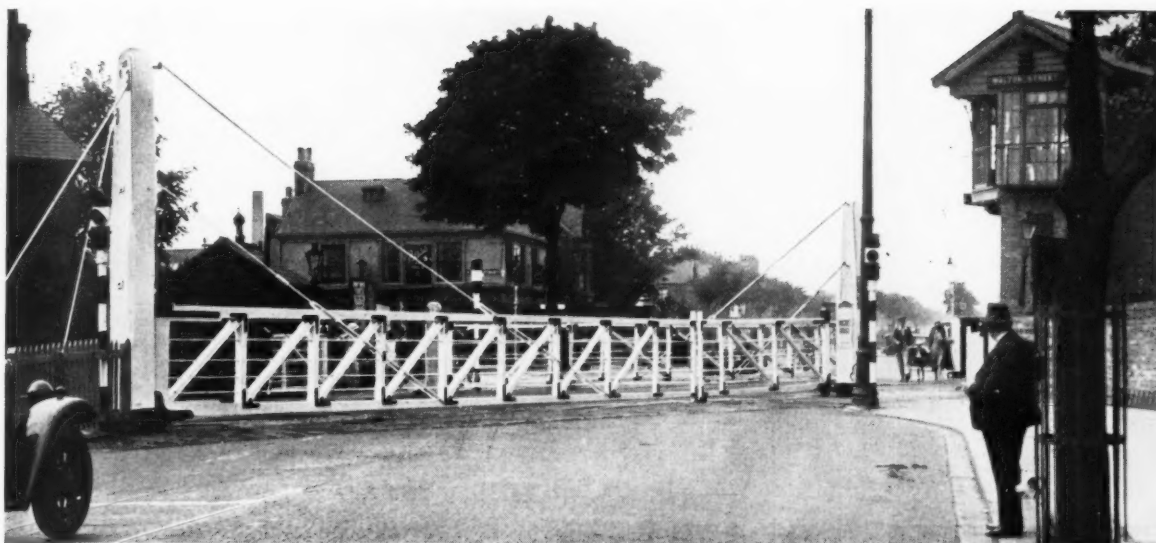
This unsatisfactory arrangement has now been dispensed with, and road traffic control light signals operated by the signalman have been placed on either side of the crossing, the gates of which are operated electrically. A supply of electric power at 220 volts is obtained from the Hull Corporation and is used for working the gate motors and traffic signals and the charging of a standby battery which, in case of a power supply failure, enables the traffic signals and gate detection controls to continue operating. The drive rod from the gate motor to the gates is provided with a selector, for use in case of power supply failure, which, when operated by the lever in the locking frame provided for that purpose, disconnects the gates from the

motor and connects them to a gate wheel in the signal cabin.

A feature of the installation is the use of a gate machine of the oil pump type, in which the motor runs in the same direction whether opening or closing the gates, pumping oil to one or other side of a vane to which the gate rod is coupled. The position of a slide valve determines both the side of the vane to which the oil is forced and also the rate of pumping; this valve, operated by a control lever in the signal cabin, forms the signalman's control of the gates. It is claimed that as the momentum of the motor armature is available, by a reversal of the slide valve position, for stopping and reversing the gates, the signalman's control of the latter is entirely effective.

The signals, which are of the conventional road traffic control type, go through the cycles usual for such signals, showing amber for a short period (4 sec.) while changing from green to red, and amber & red together before showing green. The cycle is not automatic, however, as with the usual installation, as it is controlled by the signalman's gate stop lever. The placing of the gate stop lever in the





*Walton Street level crossing looking along Springbank West from Hull*



*Left: Gate operating lever in signal box. Right: Near side signal, approaching city*

reverse check position ready for opening the gates to road traffic causes the red and amber indications to show, and these change to green when, after the gates have been swung, the gate stop lever is moved to the full reverse position locking and detecting the gates. A preliminary contact, made when moving the stop lever towards normal, suppresses the green and shows amber until a 4-sec. time relay has operated, when the amber is replaced by red. Until the red is showing, the stop lever is prevented from being moved towards normal, which is necessary before the gates can be closed to road traffic.

The very large numbers of road traffic control signals which have been installed within the last few years have had the result of educating the average road vehicle driver in the meaning of coloured light signals. It appears certain that considerable economies are possible to the railway

companies by taking the fact of this education into account in solving their level crossing problems as has been done in this instance, which is believed to be the first of its kind in this country.

This scheme was developed in collaboration with, and to meet the requirements of Mr. C. M. Jenkin Jones, Superintendent, North Eastern Area, L.N.E.R. The work has been carried out under contract by the Westinghouse Brake & Saxby Signal Co. Ltd. under the instructions of Mr. John Miller, B.E., LL.D., Engineer, North Eastern Area, to the designs and under the supervision of Mr. A. Tattersall, M.I.E.E., F.Inst.P., Signal and Telegraph Engineer, North Eastern Area, L.N.E.R.



*Gate operating motor fixed below signal box*

## OPENING CEREMONY AT GRIMSBY FISH DOCK



*Panoramic view of Grimsby fish docks. Part of the old quay is seen on the extreme right*

As briefly recorded last week, the new 37-acre fish dock at Grimsby was opened by Sir Henry B. Betterton, Chairman of the Unemployment Board, on October 4. A description and plan of this enterprise appeared in *THE RAILWAY GAZETTE* of September 21, and some features of the constructional work were dealt with in our issue of June 23, 1933.

A gathering of some 6,000 spectators watched the ceremonial from the dock itself, together with many thousands more in the surrounding area. The whole fleet of North Sea trawlers and drifters in the port was gaily decorated with bunting and house flags, and as the trawler *Grimsby Town*, carrying the official party, nosed through the red, white and blue ribbon stretched across the entrance to the dock, she was greeted by a fanfare of syrens.

After a cruise of inspection lasting a quarter of an hour, the *Grimsby Town* berthed at the south quay, where the passengers, consisting of Sir Henry and Lady Betterton and representatives of the L.N.E.R., the corporation and engineering firms concerned in the constructional work, disembarked for the opening ceremony.

The Mayor of Grimsby, Mr. C. Canning, opened the speeches. He considered that the completion of the dock marked a new chapter in the annals of the port, following a period of hardship and difficulty faced with gallant resolve, and he hoped that the anticipated renewal of trade would bring back prosperity to all concerned in the fishing industry.

Declaring the dock open, Sir Henry Betterton referred to the reputation won by Grimsby as the first fishing port of Great Britain. To maintain the title it was essential that the town should enjoy adequate facilities, and it was now his privilege to open the finest equipped and most up-to-date fishing dock in the world. At such a moment he was sure that all would remember the debt they owed to two promoters of the enterprise who had

not lived to see its completion, the late Lord Faringdon, Deputy Chairman of the L.N.E.R., and Mr. J. A. Wickham.

The splendid achievement which had now been inaugurated was the result of perfect co-operation in an enterprise of great national importance between the municipal authorities, who raised the money and built the dock, and the railway company, which took it over on a lease providing for the reimbursement of the town. Nor must the fishing industry itself be forgotten, for it had set a shining example by its determination to keep running and maintain employment in the face of serious depression. Sir Henry concluded by wishing success to the town and all connected with its enterprises.

At the conclusion of the opening ceremony, a short service was conducted on the quayside by the Bishop of Lincoln.

Following tea, served in a large marquee near the docks, Mr. William Whitelaw, Chairman of the L.N.E.R., was presented with a silver-mounted walking stick made from an ancient

piece of oak discovered during the excavations. A vote of thanks to the engineers and contractors was proposed by Sir Ralph Wedgwood, Chief General Manager, L.N.E.R., who said that by their efforts they had transformed 157 acres of mud into a capital asset. Mr. K. A. Wolfe Barry (of Sir John Wolfe Barry & Partners) and Sir A. Lindsay Parkinson (Director of Sir A. Lindsay Parkinson & Co. Ltd.) responded.

Sir Henry and Lady Betterton and the following L.N.E.R. representatives travelled by special train from King's Cross to Grimsby for the occasion:—

Mr. William Whitelaw (Chairman), Sir Charles A. Batho, Mr. O. R. H. Bury (Directors); Sir Ralph L. Wedgwood (Chief General Manager) and Lady Wedgwood; Messrs. V. M. Barrington-Ward, A. J. Brickwell, C. G. G. Dandridge, H. N. Gresley, J. McLaren, A. E. Megson, C. H. Newton, R. R. Pettit, J. B. Pritchard, A. P. Ross, G. F. Thurston.

Others present included:—

Mr. H. G. Maurice, C.B. (Fisheries Secretary, Ministry of Agriculture and Fisheries); Col. E. G. H. Cox, C.B.E., D.L. (Dyson Bell & Co.); Messrs. R. S. Bamber, R. D. Gwyther, Col. Greenhough (all of Sir Lindsay Parkinson & Co.).



*The scene at the opening ceremony. The trawler "Grimsby Town" is in the background*

## RAILWAY NEWS SECTION

### PERSONAL

Mr. Frank Potter, Principal Assistant to the Superintendent of the Line, Great Western Railway, who underwent an operation at the Royal Masonic Hospital and Nursing Home at Ravenscroft Park, on Tuesday, is, we are glad to state, progressing favourably.

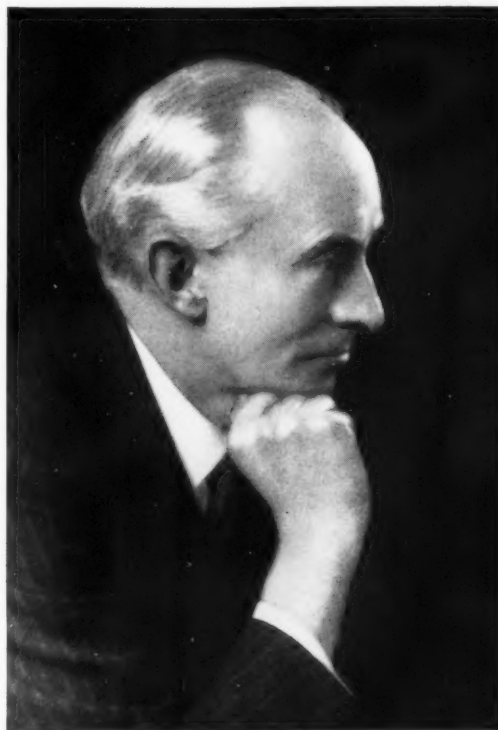
The following appreciation of the late Mr. W. R. R. Culver has been received from Mr. W. Tyrrell, the only surviving member of the original Board of Trustees of the Railway Convalescent Homes:—

"The retirement of Mr. W. R. R. Culver from the Secretaryship of the Railway Convalescent Homes at the close of 1933 severed a connection of 35 years' standing. During this period his name had deservedly become a household word amongst railwaymen of England and Scotland, and the fame of the Homes had reached beyond our shores. The Institution had just been launched in 1899 when Mr. Culver, then a young man full of energy, came home from abroad and was introduced to the Trustees (who had already been appointed) by his father and by Mr. J. E. Nichols, and was recommended by them as being suitable for the position of Secretary. This was a fortunate circumstance, for it is not saying too much to assert that the good fortune of the movement, especially in its early stages, largely depended upon its Secretary. His untiring energy, and his most genial personality, soon won him a place in the hearts of all who came in contact with him.

"Whilst the Trustees and their committees were busy making known to all the railway people of this country the existence of what has now become a great institution, Mr. Culver was equally busy on the same lines amongst the Chairmen, Managers, and Directors of all railways. The result of his work in that direction has become more and more evident as time has gone on, and the many benefits now enjoyed by members of The Railway Convalescent Homes are largely the outcome of his efforts. The sad news of his recent death so soon after retirement, came as a shock to thousands of railway folk, and especially to those who have been closely connected with him in a work which he enjoyed, and which has brought great benefits to over 100,000 railway people. An abiding monument to his memory exists in the eight convalescent homes.—R.I.P."

Mr. Sidney Emile Garcke, who assumed on Monday the presidency of the Institute of Transport for the current session, was born in January, 1885. His father, the late Mr. Emile Garcke, formed the British Electric Traction Company in 1895 and played a prominent part in the electrification of the company-operated tramway systems throughout Great Britain. Mr. Sidney Garcke joined the group of enterprises associated with the British Electric Traction Company on leaving

England and Wales. When, therefore, the main line railway companies secured their Road Transport Acts in 1928, this group took a prominent part in the negotiations for the co-ordination of rail and road passenger services. As the result of lengthy conversations in which Mr. Garcke represented the road interests, arrangements were completed whereby the main line railways were enabled to participate in the shareholding of the provincial omnibus companies to an equal extent with those held by the British Electric Traction Company or its associates, Tilling & British Automobile Traction Limited (as the old B.A.T. had become in May, 1928). At the present time Mr. Garcke is Chairman of a large number of these railway-associated provincial omnibus companies, including the Aldershot & District Traction Co. Ltd., East Kent Road Car Co. Ltd., Southdown Motor Services Limited, and Thames Valley Traction Co. Ltd. In addition, he is Chairman of the Electrical Press Limited.



Mr. Sidney E. Garcke, M.I.Mech.E., M.Inst.T.,  
The new President of the Institute of Transport

college. About that time these companies were considering seriously the introduction of motor omnibuses to act as feeders to the tramway services. From the first he took a keen interest in the introduction of the motor omnibus through the instrumentality of the British Automobile Traction Co. Ltd. Mr. Garcke was later appointed to the board of directors of the latter company, and became Chairman in April, 1923. He became a Director of the parent company, the British Electric Traction Company, in 1928, an office which he still holds. The motor services originally introduced as feeders to tramways had, by 1928, developed into an important group of provincial undertakings covering the greater part of

### L.N.E.R. APPOINTMENTS

The London & North Eastern Railway announces that in consequence of the recent death of Mr. A. McIsaac, Divisional Stores Superintendent, Scottish Area, the Directors have appointed Mr. A. Walker, Chief Clerk, Stores Department, Gateshead, to be Stores Representative, with office at Cowairs, to represent the Chief Stores Superintendent in Scotland.

Also that the following appointments have been made:—

Mr. K. P. Walker, Assistant to Superintendent (Staff), North Eastern Area, to be District Goods & Dock Manager, West Hartlepool, in succession to Mr. R. Tate who will retire shortly under the age limit.

Mr. T. F. Cameron, Assistant District Superintendent, Newcastle, to be Assistant to Superintendent (Staff) in succession to Mr. Walker.

Mr. E. W. I. Arkle, Assistant District Goods Manager, Newcastle, to be Assistant District Superintendent, Newcastle, in succession to Mr. Cameron.

Mr. A. Walker, who, as announced above, has been appointed Stores Representative, Scottish Area, L.N.E.R., joined the North Eastern Railway Traffic Department in 1900. Three years later he was transferred to the Stores Superintendent's office and subsequently gained wide experience from service in various sections of that department. In January, 1933, he was



appointed Chief Clerk to the Divisional Stores Superintendent, Gateshead, L.N.E.R., the post he has now relinquished to take up his new duties at Cowlairst.

Mr. K. P. Walker, who, as reported above, has been appointed District Goods and Dock Manager, West Hartlepool, L.N.E.R., was educated at Dover College and entered North Eastern Railway service in March, 1909. Between 1909 and 1915 he obtained a varied station, dock, yard and district office experience under the District Superintendent at Middlesbrough, and nine months' experience in the Rates Office of the Chief Goods Manager. In 1913 he served as Assistant Inspector at The Hartlepoons and

that he was transferred to York as Assistant to the Superintendent (Staff), North Eastern Area, the position he now relinquishes to return to West Hartlepool as District Goods and Dock Manager.

As foreshadowed in these columns on page 117 of THE RAILWAY GAZETTE for July 20, Lt.-Col. G. A. C. Webb, D.S.O., retired from the position of Chief of Police, North Eastern and Scottish Areas L.N.E.R., at the beginning of this month. Prior to the amalgamation, Col. Webb was Chief of Police, Great Northern Railway, and from 1923-26 was in charge of the Western Division of the Southern Area; he was appointed to the North Eastern and Scottish Areas in the latter year.

Light Infantry, and saw active service in France with the 6th Battalion from May, 1916, until the end of 1917. He subsequently proceeded to India, where, as a member of the Indian Army Reserve of Officers, he served with the 2/21st Punjabi Regiment and attained the rank of Captain. Mr. Rowe returned to England on demobilisation in 1919, and was admitted a Solicitor in the following year. After practising in Birmingham until November, 1922, he became a member of the staff of the Solicitor to the Great Western Railway Company. In 1929 Mr. Rowe received an appointment with Crawford, Bailey & Co., of Bombay, who act as legal advisers to the Bombay, Baroda & Central India Railway Company and the Madras &



**Mr. K. P. Walker,**

Appointed District Goods & Dock Manager,  
West Hartlepool, L.N.E.R.



**Lt.-Col. G. A. C. Webb, D.S.O.,**

Chief of Police, North Eastern and Scottish  
Areas, L.N.E.R., 1926-34



**Mr. S. G. Rowe,**

Appointed Assistant Secretary,  
G.W.R.

was later appointed second staff clerk in the General Superintendent's office, York, and subsequently Chief Clerk, Outdoor Section, in the same office. During the war he served (with the rank of Lieutenant) with the Docks Directorate under the Director-General of Transportation in France. From May, 1920, Mr. Walker undertook special work in the Staff Section of the General Manager's office, York, until in December of the same year he was transferred to Sunderland as Acting Assistant to the District Superintendent. In August, 1921, he returned to the General Manager's Staff Section, and in February, 1922, was appointed Assistant District Goods and Dock Manager at West Hartlepool. In July, 1924, he was appointed Dock Superintendent, Middlesbrough, and in May, 1925, was transferred to Hull as Acting Assistant District Goods Manager, being appointed Assistant District Goods Manager at Newcastle in September, 1926. In December, 1927, Mr. Walker was appointed Acting District Goods and Dock Manager, West Hartlepool, and it was in March, 1928,

Colonel Webb was entertained at a farewell dinner at the Royal Station Hotel, York, at which Mr. J. Hornsby, Divisional General Manager, presided. Among those present were:—

Messrs. C. M. Jenkin Jones, P. Gibb, John Miller, S. T. Burgovne, A. C. Stamer, C. M. Stedman, and Mr. H. S. Cole, Col. Webb's successor.

The Chairman, proposing Col. Webb's health, remarked upon his great services to his country and to the railway and then presented him on behalf of his colleagues with a sporting gun. Colonel Webb gratefully acknowledged the tribute and gift.

Mr. S. G. Rowe, who has been appointed Assistant Secretary to the Great Western Railway—in succession to the late Mr. S. B. Collett, whose tragic death was recorded in THE RAILWAY GAZETTE of July 6—is a Solicitor by profession and was articulated in 1913 to his late father, Mr. William Rowe, Solicitor, of Redruth, Cornwall. In April, 1915, he joined the Scottish Horse, but in July of the same year was gazetted to the Duke of Cornwall's

Southern Mahratta Railway Company. In 1931 he rejoined the Great Western Railway Company for special duties.

We regret to record the death of Mr. Pietro Sategna, for ten years Italian State Railways representative at Cardiff.

From the *London Gazette*:—Engineer & Railway Staff Corps—Capt. W. H. S. Tripp, M.C., M.Inst.C.E., M.I.Mech.E., late R.E., T.A. to be Major (October 6, 1934).

Messrs. J. A. Rodger, Marine Superintendent, Glasgow, L.N.E.R., and Mr. C. A. Bremner, Steamship Superintendent, Scotland, L.M.S.R. (Gourock), have been elected ratemakers' representatives to the Rothesay Harbour Trust for the coming year.

Lt.-Col. G. Huddleston, C.I.E., V.D., has resigned the Managing Directorship of the Assam-Bengal Railway Company and is succeeded in that position

by Mr. G. H. Ormerod. Colonel Huddleston, however, retains his seat as a Director.

We regret to record the death, on October 1, of Mr. James Holmes, sometime Organising Secretary of the National Union of Railwaymen.

Messrs. A. H. Roberts and W. J. Hutchinson, respectively Traffic Superintendent and Resident Engineer of the Leopoldina Railway, left Rio on September 18 on leave in England.

We regret to note the recent death of Dr. Richard von Helmholtz, the well-known German locomotive engineer. He was born in 1852, the son of the eminent physicist Herman Ludwig von Helmholtz, one of the founders of the doctrine of the conservation of energy. Richard's first practical experience was with the firm of Borsig and he subsequently studied at the Munich Technical High School, then joining the firm of Krauss, where he rose to be Chief Designer at the Marsfeld branch. It was von Helmholtz and Georg Krauss who built up the well known Bavarian locomotive concern. The former devoted much attention to the subject of running on curves and produced the Krauss-Helmholtz bogie. He was also joint author of the first section of a locomotive history from 1835-1880, and contributed much to enrich the fine collection of works and documents in the Deutsches Museum at Munich.

## Locomotive Testing Stations

In his presidential address before the Institution of Locomotive Engineers, Mr. Gresley, it may be remembered, referred to the constitution of the committee assembled under the Department of Scientific and Industrial Research to report upon the subject of locomotive testing stations. This committee was composed of the Chief Mechanical Engineers of the four leading railway companies, three locomotive manufacturers, two railway consulting engineers, two university professors, and a representative of the Crown Agents for the Colonies, under the chairmanship of Sir Alfred Ewing. The names of those comprising the committee are as follow:—

Sir Alfred J. Ewing, K.C.B., LL.D., M.Inst.C.E., F.R.S. (Chairman); Professor H. L. Callendar, C.B.E., F.R.S., Professor of Physics, Imperial College; Lt. Col. E. Kitson Clark, Kitson & Co. Ltd.; Mr. C. B. Collett, Chief Mechanical Engineer, G.W.R.; Professor W. E. Dalby, M.Inst.C.E., M.I.Mech.E., F.R.S., Professor of Engineering, Imperial College; Sir Henry Fowler, K.B.E., Chief Mechanical Engineer, L.M.S.R.; Mr. C. N. Goodall, O.B.E., Robert Stephenson & Co. Ltd.; Mr. H. N. Gresley, C.B.E., Chief Mechanical Engineer, L.N.E.R.; Mr. R. E. L. Maunsell, C.B.E., Chief Mechanical Engineer, Southern Railway; Sir Seymour B. Tritton, K.B.E., M.Inst.C.E., Messrs. Rendel, Palmer & Tritton (Consulting Engineers to the Government of India); Mr. F. S. Whalley, the Vulcan Foundry Limited; and Major C. E. Williams, O.B.E., Chief Inspecting Engineer, Crown Agents for the Colonies.

## The Study of Passenger Transport

The President of the Institute of Transport, Mr. Sidney E. Garcke, delivered his inaugural address in London on October 8. Explaining his choice of a subject, Mr. Garcke said that it was only by the study of passenger transport, based upon the examination of data acquired from previous experience, that new problems could be resolved, a fact deserving serious consideration at a period when one excellently documented medium—the railway—was challenged by the comparatively uncharted operations of road and air. As a specialist in passenger transport on land, however, he proposed to confine himself mainly to that subject in his lecture.

A necessary preliminary to training in the administration of transport services was a knowledge of how public passenger travel had developed. Since traffic of this sort in London and certain other large towns was influenced by the peculiar requirements of town planning and housing, it was in the country that its history presented the most illuminating lessons to the student of transport in general.

Road services over comparatively long distances were more fully developed long before the period of railway construction than was generally appreciated. Their passengers were mostly the well-to-do, and local transport at a moderate cost was a quite recent development. Until about two hundred years ago, however, long journeys were chiefly the privilege of persons possessing private saddle horses or carriages. As late as the seventeenth century, there were many important places in Scotland which could be reached by public vehicle from London only once a week, and the journey sometimes occupied nearly a fortnight. The introduction at a later date of the regularly scheduled stage coach improved conditions somewhat, although services were still infrequent, and remained so until this vehicle was promoted to carry mails in the closing years of the eighteenth century.

From the economic point of view, the stage coach enjoyed an unchallenged and successful position which did not necessitate the study and analysis of its operation that has been forced upon later transport undertakings. In due course there suddenly appeared a formidable rival in the form of a private highway with an iron rail.

For the student of inland transport as a whole, it would be justifiable to describe the period thus inaugurated as the railway interlude. The door-to-door principle was the natural transport ideal, and the roads the easiest means of securing it. But road engineering had failed to produce a highway capable of coping with more and heavier traffic. Introduced somewhat

as a compromise, the railway therefore ruled unchallenged until the roads, stimulated by the internal combustion engine and the pneumatic tyre, as permanent way had been by the steam engine, reasserted their claims to recognition.

This renaissance, however, received an artificial and not wholly beneficial impulse from the period of intensive road construction and improvement following the great war, which was intended to provide work for the unemployed. Since the provision of wages was a parallel object with the establishment of an efficient road system, it might be claimed that some of the schemes were more grandiose than was necessary. Moreover, the work was promoted to provide relief in densely populated areas, so that rural roadways were, and to some extent still are, neglected, and a source of potential danger to the high speed motorcar which is the product of the arterial routes.

Had the use of rubber been developed a century ago, Mr. Garcke considered that Stephenson would have pursued his early association with Gurney and other road locomotive pioneers for the development of road services. It was the hopelessness of running a heavy, iron-tyred steam engine on a waterbound highway that confined his attentions to the costly private track.

As to present day relations between rail and road, the use made by the railways of the road operating powers granted in 1928 had promoted a co-ordination of services that was of general benefit, and had saved them from the serious fight which would have resulted had they challenged the existing important road companies on their own ground. The investment of capital in the omnibus services, however, was not an indispensable preliminary to the co-operation secured, and, as fresh money had to be raised for the purpose, struck Mr. Garcke as of debatable wisdom. He was similarly doubtful concerning the railway policy of assisting to finance in its years of struggle a transport medium which might one day become a formidable rival rather than a complementary service—namely, the airway. Co-operation between air and rail seemed to him less valuable than that between rail and road, and might have been secured to the necessary extent without a financial tie and the onus of raising new capital.

Road interests, also, were far more than a complement to those of the railway, and although the two worked together at present in many places, the tastes of the public would eventually decide the life of agreements. The cheap private car and the pedal cycle already enjoyed undisputed popularity, and it seemed that the future

rested largely with these and with the aeroplane. The bicycle occupied a peculiar position in being exempt from charges towards highway upkeep and unlikely to be brought under any form of control. Its legion of riders was a formidable factor at the polls, and the machine was an example of how the ballot box could still outweigh other considerations in this country.

Mr. Garcke reminded his hearers that competition in transport did not benefit the consumer as it did in other forms of industry. A single twenty-seat bus with a load of twenty passengers was working in ideally efficient circumstances and permitted the charging of minimum fares. The appearance of a rival would split the load and mean a loss to both. Fares might come down in a war of price-cutting but would certainly return to a higher level. The transport operator was helplessly saddled with his empty seats, whereas the manufacturer could mitigate the expenses of depression by reducing his output.

In these days, when the introduction of control in the public interest appeared to be accepted as inevitable in the case of large-scale public services, Mr. Garcke considered that private ownership with a measure of public control was preferable to handing an enterprise over to the State unconditionally. Municipally-owned transport systems presented a problem of their own owing to the inevitably parochial attitude which frequently influenced their operation. Their transference to much larger and expertly directed companies in the same district was a solution of their future, a successful example of such policy being afforded by the absorption of small local undertakings in the London Passenger Transport Board.

The extension of the principles of London Transport to other parts of the country had been proposed, but such an arrangement, centring of necessity in densely populated areas, would not provide for the less remunerative but essential rural services. Were the scheme put into effect, the whole country would have to be dealt with at one time, and in such a way that every area came under the control of a transport board.

"Compromise," Mr. Garcke concluded, "is the essence of British politics, and the creation of State boards for the control of different public utilities is the compromise between capitalism and a socialist condition that may be expected from the British people. See editorial comment on page 583.

**ELECTRIFICATION OF BRENNER LINE.**  
—Reuters Trade Service learns from Milan that the electrification of the Bolzano-Trento section of the Brenner railway has been completed and the line will be opened for traffic on October 28.

## Internal Air Services of Great Britain

Since we published particulars of the internal air services operating in this country in May last many important changes have taken place. Although some services have been withdrawn for one reason or another, the summer

schedule route mileage has been increased from about 2,000 to just over 3,000 miles by the inauguration of a number of new routes.

The two most important of the new services are undoubtedly those begun



Sketch map of the internal air lines of Great Britain



TABLE OF REGULAR INTERNAL AIR LINES IN GREAT BRITAIN

Operator	Services	Summer Timetable	Winter Timetable	Notes
Railway Air Services Limited	†London (Croydon)—Birmingham (Castle Bromwich)—Manchester (Barton)—Belfast (Aldergrove)—Glasgow (Renfrew)	Once daily except on Sundays	Once daily except on Sundays. (Provisional)	—
	†London (Croydon)—Cowes (Somerton)—Bembridge	Four services daily	Two services daily calling in addition at Southampton (Provisional)	Service operated by Spartan Air Lines.
	†Liverpool (Speke)—Birmingham (Castle Bromwich)—Cardiff—Teignmouth (Haldon)—Plymouth (Rodborough)	Once daily except on Sundays	Service suspended for winter	—
Aberdeen Airways Limited	†Birmingham (Castle Bromwich)—Bristol—Southampton—Cowes (Somerton)	Twice daily except on Sundays	Service suspended for winter	—
	Aberdeen (Dyce)—Glasgow (Renfrew)	Twice daily	Twice daily	—
Blackpool & West Coast Air Services Limited	Liverpool (Speke)—Blackpool (Squire's Gate)—Isle of Man (Castletown)	Twice daily	Once daily	—
Eastern Air Services	Leicester—Nottingham (Tollerton) Skegness	Once daily	Suspended for winter	—
Highland Airways Limited	†Inverness—Wick—Kirkwall	Once daily	Once daily	—
	Aberdeen (Seaton Airpark)—Wick—Kirkwall	Once daily	Twice daily	—
Hillman's Airways Limited	Belfast (Newtownards)—Isle of Man (Ronaldsway)—Liverpool (Speke)—London (Essex Airport, Stapleford)—Paris (Le Bourget)	Once daily	Service suspended between Belfast and London during winter	—
Jersey Airways Limited	London (Heston)—Jersey	Twice daily	Once daily	—
	Southampton (Atlantic Park)—Portsmouth—Jersey	Twice daily	Once daily	—
Norman Edgar Western Airways Limited	†Cardiff—Bristol (Whitchurch)	Four services daily	Two services daily	Connections with P.S. & I. of W.A. Ltd.'s services at Bournemouth during summer months.
	Bristol (Whitchurch)—Bournemouth (Christchurch)	Twice daily	Service suspended for winter	
Northern Airways	Newcastle (Cramington)—Carlisle—Isle of Man	—	—	—
Portsmouth, Southsea & Isle of Wight Aviation Limited	London (Heston)—Ryde—Shanklin (Apse)	Four services daily	Friday to Monday services	—
	Portsmouth—Ryde—Shanklin (Apse)	Every half hour	Five services daily, not calling at Shanklin	—
	Ryde—Shanklin (Apse)—Bournemouth (Christchurch)	Four services daily	By request only	Connections with Norman Edgar Western Airways at Bournemouth during summer.
	Shoreham—Portsmouth—Bournemouth (Christchurch)	Twice daily	By request only	
	Shanklin (Apse)—Ryde—Portsmouth—Shoreham	Twice daily	By request only	
Provincial Airways Limited	London (Croydon)—Portsmouth—Southampton (Atlantic Park)—Bournemouth—Dorchester—Weymouth—Teignmouth—Plymouth—Hayle	Three services daily	Once daily as far as Plymouth only	—
Royal Dutch Air Lines	†Liverpool (Speke)—Hull (Hedon)—Amsterdam	Once daily except on Sundays	Service suspended for winter	—
London Scottish & Provincial Airways Limited	Leeds (Sherburn in Elmet)—Nottingham (Tollerton)—London (Heston)—Paris (Le Bourget)	Twice daily	Twice daily between London and Leeds. Once daily between London and Paris	Connections with Jersey Airways and P.S. & I.W. Aviation Ltd. at Heston.
Short Bros. Ltd. & Southend Flying Services	Rochester—Southend	Ten services daily	Four services daily	—

† Royal Mail routes.

in August by Railway Air Services Limited between Birmingham, Bristol, and Cowes; and London, Birmingham, Manchester, Belfast, and Glasgow. The operation of these routes is particularly important as it has given the Postmaster General reliable and suitable services with which to carry out experiments in the carriage of internal mails by air. Although experience had been gleaned previously from the successful operation of the Orkney air mail operated by Highland Airways Limited since May 29 of this year, it still remained for a large scale intercity experiment to be made. The only other internal operator authorised to carry mails is Norman Edgar Western Airways Limited which holds a sub-contract from Railway Air Services for carrying mails between Cardiff and Bristol.

The new services operated by independent concerns number four in all, i.e. if the Hillman Airways Limited's London-Belfast route is excluded as being merely a partial continuation of the services formerly operated by Midland & Scottish Air Ferries Limited, and they are:—

London Scottish & Provincial Airways Limited (Leeds-Nottingham-London-Paris).

Aberdeen Airways (Aberdeen-Glasgow). Northern Airways (Newcastle-Carlisle-Isle of Man).

Short Brothers Limited & Southend Flying Services (Southend-Rochester).

The flights of Eastern Air Services Limited from Nottingham to Skegness were not included in our map in May, as they were a summer service, which although inaugurated in the summer of 1933, did not re-start until late in the season this year. However, an extension was made during this summer from Nottingham to Leicester, thus providing yet another town with a regular air service.

A number of false starts were made. Bouts-Tillotson Transport Limited flew experimental flights with a freight plane between London and Manchester with the idea of eventually providing a regular service between the two cities, but nothing came of the venture. A similar fate befel the proposed services of Southern & Central Air Lines Limited between Southampton, Nottingham, Birmingham, and Hull, for which a date of commencement was announced and printed timetables actually issued.

In a number of cases services are discontinued during the winter months. While our map shows the various routes as operating during the summer months, the appended table gives details of both summer and winter services. It is impossible, however, to forecast the state of internal air transport next summer, as many plans for new services are now under consideration. Perhaps the most important is that germinating in Ireland. An Irish Free State Government-subsidised company is being formed with the principal object of providing a Dublin, Liverpool, London service.

## Opening of New Flour Mills on the Southampton Docks Extension, Southern Railway

An important milestone in the Southern Railway Company's development of Southampton as a port was reached on October 4 when the Solent flour mills of Joseph Rank Limited were opened by the Mayor of Southampton. This is the first factory to be erected on the land reclaimed as part of the extensive scheme of docks extension undertaken by the Southern Railway at Southampton. It is an imposing red brick building occupying

grain will be transported direct from quayside to mills by means of travelling conveyor-belts of the overhead class, and the grain received into the buildings by means of these. All the machinery is electrically operated.

At the luncheon which followed the official opening, the Mayor of Southampton, Councillor W. D. Buck, welcomed the new industry that Joseph Rank Limited had brought to Southampton. In his reply Mr. Joseph Rank

ampton Corporation station upon exceptionally favourable terms. The vast scheme of docks extension undertaken by the Southern Railway Company at Southampton had reclaimed about 400 acres situated to the northwest of the original docks. The quay wall of this reclaimed land was some 7,000 ft. in length with a depth of water varying from 40 to 45 ft. at low water. Four capacious passenger and cargo sheds out of a total of eight had already been constructed, and, in addition, at the far end of the land was the largest graving dock in the world, the King George V Dock. The dock and other services left available some 200 acres



*New flour mills at Southampton, the first factory to be built on land reclaimed as part of the extensive docks extension scheme of the Southern Railway. Part of the reclaimed land may be seen behind the new buildings*

some two acres of ground, situated 200 yd. from the quayside. The mill is attached to a warehouse, 8 storeys in height, and a ferro-concrete silo, having a storage capacity of about 15,000 tons of grain. The other main buildings, comprising a receiving house, a flaking and provender mill, a screens house and mill, and an engine house, are so arranged that the grain can be transferred, first direct from the silo to the mills, and then, after various milling processes, to the warehouse. The mills have a capacity of 40 sacks an hour, which can be increased at need to 80 sacks an hour.

Modern equipment for the expeditious discharge of the grain from ship and subsequent conveyance to the mills has been installed. Discharging will be carried out by means of a pneumatic discharging plant having a capacity of 120 tons an hour. A covered gallery, 700 ft. long, has been erected along the quay wall, and, at its western end, is joined at right angles by another, 600 ft. long, which connects with the receiving house. Along these two covered galleries the

expressed his pleasure in the firm's new enterprise and in being able to take advantage of the excellent facilities provided by the Southern Railway scheme. This flour mill was to supply the Southern Counties, drawing its raw materials from abroad and from the adjacent agricultural districts.

Mr. G. S. Szlumper, C.B.E., Assistant General Manager of the Southern Railway, who took the chair at the luncheon, told the story of the building of this first factory upon the newly reclaimed land and gave figures of the traffic that had already accrued to Southampton through the new quayside. From January to August, 1934, the new quayside had handled some 1,500,000 tons of shipping, 30,000 passengers and 47,000 tons of cargo. The site possessed the ideal combination of access by deep water, rail, and road transport, and therefore offered a strong attraction to manufacturers requiring minimisation of transport charges by the erection of factories alongside deep water quays at which the largest liners could berth. Electric power was available from the South-

for factory sites which possessed the facilities already described. Mr. Szlumper concluded with further interesting statistics on the exceptional possibilities of this site for those importing raw material in large quantities, or those exporting manufactured goods to a variety of Empire and foreign ports.

**SOUTHERN RAILWAY POSTERS.**—The Southern Railway Company's continental connections are clearly and effectively indicated in a series of four artistic posters recently issued from Waterloo in connection with the company's "Short Sea Routes" services. The posters in question relate to Switzerland, Belgium, Germany, and Paris, and show the times of certain train and boat departures and arrivals on both sides of the Channel. This information is set out in a neat tablet of easily read letterpress superimposed on a coloured background of striking design—the most graceful, perhaps, being that showing the golden lilies of France on a field of the deepest blue.

## The Argentine Railway Wage Dispute

(From our Buenos Aires correspondent)

The dispute between the Argentine railways and their staffs over the wage reductions, which was dealt with in an article in THE RAILWAY GAZETTE of September 7, has now been submitted to the arbitration of the President of the Republic, all efforts on the part of the Director-General of Railways to solve the problem through the medium of negotiations between the parties to the controversy having totally failed. As stated in that article, a deadlock was reached in the last week of August, when the negotiations, which had been in progress for several months, were broken off, owing to the uncompromising attitude of the unions, who persisted in claiming the restoration of the wage cuts, as from September 1, in view of the improved earnings of the companies during the past six months.

Although rumours of the possibility of serious trouble on the railways were rife, the fact that the unions were not anxious to incur the responsibility of declaring open war upon the companies was shown a day or two later when a mildly worded and colourless communique was issued at a joint meeting of the committees of the Union Ferroviaria and La Fraternidad, authorising the executive committees to resume the negotiations, in order to come to a decision as soon as possible, and to take any steps necessary to attain that end.

As a final effort to come to an agreement, the Minister of Public Works ordered another meeting of the representatives of the companies and the unions to be held at Government House, under the presidency of the Director-General of Railways, it being understood that, if this conference failed to achieve its end, the parties would be asked to submit the case to arbitration, or else to the decision of the Government. At the request of the Director-General of Railways, the companies submitted a memorandum setting forth the financial position of each railway, and showing the minimum contributions required in each case from the staffs to meet working expenses and fixed charges. After studying this statement for two days, the unions' representatives informed the Director-General of Railways (Dr. Garcia Torre) that they were unable to accept the companies' proposals. The railway representatives also intimated that they were unable to modify their point of view, and so the Director-General suggested that arbitrators should be appointed to adjudicate on the dispute, in reply to which the men's delegates stated that they preferred that the executive power should decide the question. The Director-General suggested that the President of the Republic should be the judge, and to this proposal both parties assented.

In the note intimating their readiness to accept the arbitration of the President, in whose fairness and impartiality they express their entire confidence, the companies point out that the question of wage reductions is closely linked up with the output of work and the

necessity for modifying and amending certain of the existing labour regulations, the rigidity of which prevents the services of the staff being utilised to the best advantage. For this reason they express the hope that the problem will be studied in all its aspects and bearings, a point of view which they trust will also commend itself to the men, in order that the solution arrived at may be mutually satisfactory to both sides.

## Railway Development in China

Readers of THE RAILWAY GAZETTE can hardly have failed to notice the general activity which is taking place almost all over China in the form of railway extensions and general development. The map below has therefore been compiled from the latest information available and is supplemented by a few following notes upon the opening of new lines from time to time.

At the same time, the Chinese Ministry of Railways has recently published the latest comprehensive administration report covering all systems under Chinese jurisdiction during the years 1928-31. This report is dealt with in our editorial on page 583 of this issue. At that time not only the railways at present under Chinese control but also those in Manchukuo were under the Ministry, and to illustrate the latter, reference is invited to the map published in THE RAILWAY GAZETTE of September 28 last, which accompanied an article upon the Manchukuo railways.

The period 1928-31 was one in which Chinese railways were greatly hampered by civil wars and unsettled conditions generally, so that news of what few new railway constructions were then in hand and opened, generally had to take a back seat, if indeed it was considered of sufficient importance to be sent to Europe at all. Consequently it is very difficult to ascertain exactly what new lines were opened during that period. Between 1929 and 1932

however, the following lines or sections of new line were opened for traffic:—

(1) Lingpao-Tungkwan-Hwayin section of the Lung-hai main line, 96 km. in length.

(2) Shiuichow-Lokchang section of the southern half of the Canton-Hankow Railway, 50 km.

(3) Hangchow-Kinghua section of the Hangchow-Kiangshan Railway, opened in several stages.

Subsequently the following extensions have been opened on the dates mentioned:—

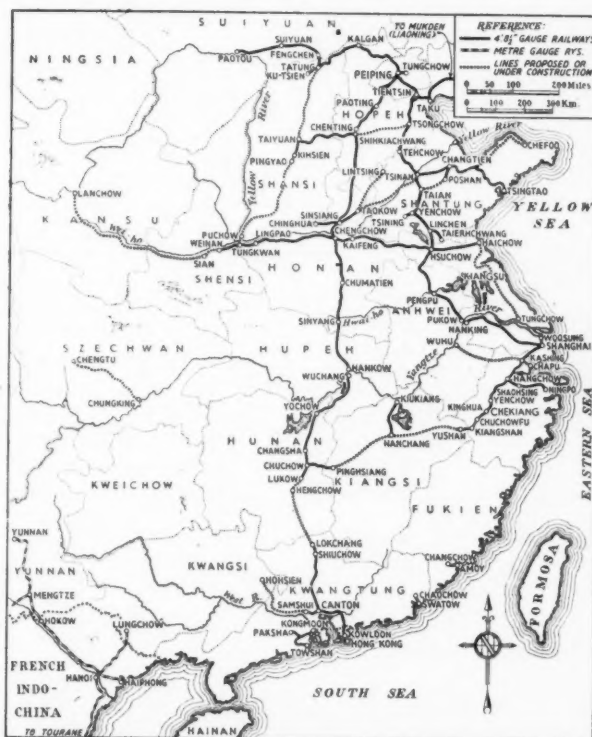
(4) October 1, 1933: Kinghua-Lungyu and

(5) December, 1933: Lungyu-Yushan, the final lengths of the Hangchow-Kiangshan line through Kiangshan on the Chekiang side of the Chekiang-Kiangsi border to Yushan just on the Kiangsi side.

(6) July 1, 1934: Taiyuan-Kih sien section of the Tatung-Puchow-Tungkwan Railway.

(7) July 2, 1934: Tungkwan-Weinan section of the Lung-hai main line, towards Sian.

There are probably few other countries in which much greater railway expansion is taking place at present.



Sketch map of existing and proposed railways in China



## Transport Statistics—Their Uses and Abuses

The importance of statistics to the transport industry was demonstrated by Mr. W. V. Wood, Vice-President, Finance and Service Departments, L.M.S.R., in an address to the Birmingham and District section of the Institute of Transport on Tuesday last. Two classes of costs, said Mr. Wood, were involved in providing any transport service. One, a constant, was inevitably incurred because the commodity sold came from a specialised plant which had to be provided and maintained. The other, a variable quantity, arose from the use of the service. As an example, he quoted a railway working at a fixed frequency over one route. Results would vary according to time and season, but it was idle to hope to control daily or weekly expenditure to compensate for these fluctuations. The bulk of the outlay was absorbed by the constant requirements of track, signals or stations. The proportion of variable to constant costs obviously altered, being smallest for a regular passenger service and greatest for lines run only to demand, such as colliery railways.

### Pitfalls in Figures

To apply units of traffic, whether train, vehicle, ton or passenger miles, to a cost which was mainly constant gave a result of no practical value for control purposes, but such a divisor might be properly applied to a variable outlay. The mileage unit, taking account of payments for preparation time and holidays, was appropriate for determining the wages of train crews. Mileage, speed and weight combined governed fuel, provided 400 tons hauled 100 miles were not regarded as having the same meaning as 200 tons hauled 200 miles; weight of like merchandise, without distance, would apply to loaders' wages, and mileage to locomotive maintenance. Even so, some reservations were necessary. Averages based upon thousands or millions of units, as in the case of a large railway, were not of practical use for controlling outlay or spotting weaknesses. They tended individually to reflect the tendency of the whole, and it should not be forgotten that what applied to the whole need not apply to any part of it.

Various fallacies arose from comparing similar figures with different meanings. Mr. Wood had seen the Irish railways criticised for charging too high fares, because their average fare per passenger was higher than in Great Britain. Actually, the British fares appeared less only because of the huge number of short distance journeys on the London electric lines, and the average Irish fare per mile was, in fact, cheaper. Lack of appreciation of the basis of figures quoted caused misapprehensions, such as that wagons were run half full because their average load in tons was about half their

average capacity. Here, again, several wagons loaded with empty barrels were required to carry what one alone would take of heavy goods, so that the figures were misleading as they stood. Conversely, a good statistical result might conceal a loss of revenue or an under-use of expensive equipment. In 1926, the railways worst year, haulage of empty wagons was lowest simply because there was too much stock for the year's needs.

### Keeping Track of Expenditure

Figures of a per mile or per hour nature, compared with other results so obtained under similar conditions, were useful pointers, but of practical value only when causes of difference and other extraneous factors could be analysed. The final test was that of cost, including the use of capital in relation to earnings, and it might then well be found that there was a loss with 90 per cent. of ideal operating efficiency and, due to the greater spread of constant charges, a profit with 50 per cent. thereof.

The principal and characteristic heads under which a transport concern spent money were the provision of equipment, operation and the selling of services. The real controls of track outlay were three. First, there were comparative local records, period by period, combined with unit costing of particular undertakings. Secondly, the line was divided into sections of "equated" miles (*i.e.*, a mile of ordinary railway weighted by additions for points, cross-overs and so on) and these were compared with the labour force employed thereon. Thirdly, subdivisions of expenditure were examined minutely and compared. An example was the cleaning and oiling of points—a substantial sum made up of many parts. The work was essential, but disparities of expense from district to district warranted analysis, and advice for future economy based upon the findings of the statistical department. Economy, however, was not the statistician's only principle. The advisability of further outlay to facilitate operation was considered and recommended when found to be economically justified.

### Applications of Statistics

Subdivision into units appeared to Mr. Wood to be essential in computing working stock maintenance costs with the possible exception of those for wagons. Locomotives were a typical example, building orders for which had totalled £18,000,000 since the amalgamation on the L.M.S.R. Economy in design was vital, but could be arrived at only by studying the questions of low coal and maintenance costs, or high efficiency and availability, in the individual classes.

Consumption of fuel in relation to work done required constant scrutiny,

taking into account possible variations in quality. In this case particularly study of detail and comparison was important. Various factors might point to apparent waste and required investigation, and possibly justification.

The rostering of locomotive and train staff to avoid excessive unremunerative hours or periods of overtime also required continual analysis of detailed time records. Combined accounting and statistical data were consulted to show the relation of costs to traffic handled for the purpose of governing wages at goods and parcels stations, and shunting costs were compared with wagon movement records. The selling side, however, was harder to control by statistical methods owing to the difficulty of connecting transport sales with the expenditure required to obtain them.

Discussing statistical methods, Mr. Wood expressed his belief in keeping such primary records of work performed as would reduce to their practicable minimum all *ad hoc* data, also that cost accounts should be taken from these records and include the use of capital. It should be possible to ascertain the complete costs, that is the combination of specific outlay with related units of work, of certain functions at any time. Costs should be expressed in a form which would separate the constant from the variable parts. Concluding, he urged that statistics were tools of management and that those which were merely interesting figures should be eliminated.

### Institution of Civil Engineers.—

In addition to those recorded on page 799 in THE RAILWAY GAZETTE of May 4, the following awards by the Council are now announced:—

The Baker Gold Medal and a Telford Gold Medal have been awarded to Mr. Ralph Freeman, M.Inst.C.E., Senior Partner, Messrs. Sir Douglas Fox & Partners, Consulting Engineers, in recognition of the development in engineering practice made by him, as described in his paper on "Sydney Harbour Bridge: Design of Structure and Foundations."

A Telford Gold Medal has also been awarded to Dr. J. J. C. Bradfield, C.M.G., D.Sc., M.E., M.Inst.C.E., late Chief Engineer, New South Wales Public Works Department, for his paper entitled "The Sydney Harbour Bridge and Approaches."

A Webb Prize has been awarded to Mr. W. E. Gelson, B.Sc. (Eng.), A.M.Inst.C.E., Assistant Bridge Engineer, North Western Railway, India, for his paper on "Moving-Load Stresses in Short-Span Railway Bridges."

The Indian Premium has been awarded to Mr. J. D. Watson, B.Sc. (Eng.), A.M.Inst.C.E., Senior Assistant Bridge Engineer, North Western Railway, India, for his paper on "The Reconstruction of the Empress Bridge over the River Sutlej."

A Telford Premium has been jointly awarded to Mr. Ralph Freeman, M.Inst.C.E., and Mr. Lawrence Ennis, C.M.G., O.B.E., M.Inst.C.E., Managing Director, Dorman Long & Co. Ltd., for their paper on "Sydney Harbour Bridge: Manufacture of a Structural Steelwork and Erection of the Bridge."

The James Forrest Medal and a Miller Prize have been awarded to Mr. Ronald Bridgman, Stud.Inst.C.E., for his paper on "Modern Permanent Way Design."

A Miller Prize has also been awarded to Mr. D. M. K. Reid, Stud.Inst.C.E., for his paper on "Permanent Way Maintenance: Some Modern Apparatus."

## NOTES AND NEWS

**L.M.S. Weston Station Re-named.**—Weston (M. & B.) station, on the Bristol, Mangotsfield and Bath line, has been re-named Weston (Bath).

**The Stratfordians' Association.**—The Stratfordians' Association, composed of past and present staff of the C.M.E. Department of the L.N.E.R., Stratford, will hold a re-union dinner in the Abercorn Rooms of the Great Eastern Hotel, Liverpool Street, on Friday, November 23. Mr. W. P. Stericker will take the chair. Full particulars can be obtained from the Honorary Secretary of the Association, Mr. A. W. Headley, C.M.E. Department, L.N.E.R., Stratford, London, E.15.

**Thames Passenger Services.**—A public lecture will be given at the London School of Economics and Political Science, on Thursday, October 18, on the subject of the waterbus, by Mr. J. H. O. Bunge, Director of the Thames Passenger Service Limited. The chair will be taken at 5 p.m. by Mr. A. P. Herbert, who has played a prominent part in advocating the establishment of a local passenger boat service on the River Thames. Admission will be free without ticket.

**Inner Circle Fare Reductions.**—On and from Wednesday, October 3, fares between stations on the northern section (Metropolitan Line) of the Inner Circle were reduced by the London Passenger Transport Board from 1½d. to 1d. These reductions have been made in order to bring about uniformity between the fares on the old Metropolitan Railway and those on the former District Railway section. Consequential reductions apply, of course, on a number of longer journeys. We comment, in an editorial note on page 579, on this removal of an anomaly of long standing.

**Mr. William Whitelaw's Gift to York Railway Museum.**—Mr. William Whitelaw, Chairman of the L.N.E.R., has presented to the Railway Museum at York the original painting of the famous picture of the opening of the Stockton and Darlington Railway in 1825. The picture will hang on the principal wall of the museum underneath a portrait of George Stephenson. An interesting story regarding the picture is quoted in *The Yorkshire Post*. It appears that John Dobbin, the painter, was a lad of 10 with a passion for drawing when he went to see the opening of the railway in 1825. He made a rough sketch of the embankment with the train on top and the arch carrying the line over the road, and filled in a few figures. This original sketch is now the property of Mrs. Howard Pease. It was not until many years later, when the jubilee of the railway was celebrated in 1875, that Dobbin painted his picture from the rough sketch which he had made as a

lad, and the painting was bought by the directors of the Stockton and Darlington Railway, who presented it to Mr. Thomas MacNay, the first Secretary of the company, when he retired. The picture passed into the possession of Mr. MacNay's daughter, Mrs. Harrison, and from whose estate Mr. Whitelaw recently bought it.

**Wild-Barfield Electric Furnaces Limited.**—Owing to the change-over from manual to automatic operation at the North (London) telephone exchange on and after Monday, October 15, this company's telephone number will be North 3082. The London works of its associated company, G.W.B. Electric Furnaces Limited (Elecfrun Works, North Road, Holloway, N.7), will have the same telephone number.

**Canadian Pacific Earnings.**—Gross earnings of the Canadian Pacific Railway for the month of August, 1934, amounted to \$10,930,000, an increase of \$987,000 compared with August, 1933, and working expenses were \$9,859,000, an increase of \$655,000, leaving net earnings \$332,000 higher, at \$1,071,000. Aggregate gross earnings from January 1 to the end of August amounted to \$78,858,000, an increase of \$8,049,000, and the aggregate net earnings of \$10,637,000 showed an improvement of \$3,669,000.

**Traffic Commissioners' Annual Reports, 1933-34.**—The third annual reports of the Traffic Commissioners for each of the road traffic areas in Great Britain have now been published in one volume. They cover the period April 1, 1933, to March 31, 1934, and with them is included a report from the Commissioner of Police of the Metropolis. The Commissioners give an account of their work during their third year of office in licensing passenger road services, public service vehicles, and the drivers and conductors of these vehicles, and in performing other duties laid on them by the Road Traffic Act, 1930. Appended to the reports are certain statistics of the operation of public service vehicles. Copies may be obtained, price 2s. 6d. net, from H.M. Stationery Office.

**Northern Ireland Traffics.**—Statistics of railway traffic and receipts in Northern Ireland for the first six months of 1934 which have been furnished by the Ministry of Commerce, make comparisons with 1932, in view of the abnormal position created by the strike early in 1933. On railways wholly in Northern Ireland, the number of passengers in the six 1934 months was 2,126,066, against 2,480,157, and the tonnage of merchandise and minerals 285,751 against 376,283. Receipts from passengers (including season tickets) for the six 1934 months were £99,988, against £105,767. Goods traffic receipts for the six 1934 months were £94,992, against £130,871 in 1932.

On railways partly in Northern Ireland, the number of passengers in the six 1934 months was 2,041,683, against 2,617,183 for the first six months of 1932, receipts from passengers being £168,958 against £215,767. Goods and livestock receipts amounted to £288,215 against £400,223, and the tonnage of goods and minerals was 479,914, compared with 605,433.

**Opening of New Railway in Soviet Union.**—A new section of the railway between Tashkent, the capital of the Uzbekistan Republic, and Iskander has been opened to passenger traffic, according to a Reuters Trade Service message from Moscow dated September 20. Tashkent is thus connected with the new industrial centre at Chirchik.

**New Russian Lines.**—To facilitate the transportation of coal from the mines at Vorkutsk, in the far north of the Urals, a railway is being constructed from the coal basin to Yugorsky Star, on the Arctic coast opposite Nova Zembla. It is planned to carry up to a million tons of coal a year on this line, and to make a large port at Yugorsky Star. The 75-mile line being built from Tashkent northwards to Tchikment will eventually be projected onwards towards the Irtysh river. To improve the communications between the big towns in the Urals and the north shore of the Caspian Sea and the Tashkent district, a new line, 165 miles long, is being laid from Ufa to Iletsik.

**Siberian Railway Renovation.**—It is reported from Moscow, states Reuters Trade Service, quoting the *Hamburger Fremdenblatt*, that in consequence of the arrangements for transferring the Chinese Eastern Railway to Manchukuo, the Soviet Government has taken measures for the widening and renovation of the Amur Railway, which will restore communications between Chita and Vladivostok via Blagovestchensk and Habarovsk. Some years ago the Government ordered a second track to be laid. During the civil war 68 bridges on the railway were blown up, some of which have now been rebuilt. Many political prisoners are being employed on work on the line.

**Chinese Eastern Railway Negotiations.**—Messages from Moscow indicate that although a price has been more or less definitely settled for the sale of the Chinese Eastern Railway, there are many side issues which still have to be determined. In particular, questions of how the money is to be paid, and the future of the present employees of the railway are still outstanding, but there seems reason to expect that final settlement will not now be long delayed. It has been suggested that the Japanese Government may guarantee the payments. Meanwhile the Chinese Government has sent a note to the Soviet Government stating that it will not recognise any disposal of the railway, but it seems probable that this will have little effect

upon the negotiations, the satisfactory termination of which will go far to establish better relations between Japan and the U.S.S.R.

#### Locomotive Nameplates for Sale.

—The L.M.S.R. is offering for sale at Crewe works nearly 200 nameplates of locomotives which have been removed from service. The oldest of them dates back some eighty years.

#### Reduction in Railway Fares in Germany.

—With the conclusion of the summer season, there comes to an end the special 60 per cent. reduction in railway fares within Germany for foreign tourists and others having their permanent place of residence outside Germany. After October 31, however, the 25 per cent. reduction which was in force before July 10 will again take effect. The winter timetable of the German Railways came into force on October 7.

**Cheaper Travel to Riviera.**—A new reduction of 30 per cent. is now in force on 30-day return railway fares from London to the Riviera, provided the tickets are issued on Saturdays or Mondays. This reduction was arranged at a conference held in London between representatives of the French hotel industry, travel associations, French municipal authorities and the P.L.M. Railway. Further negotiations are proceeding with a view to making the arrangements applicable for issue on any day.

**Reduced Fares in Canada.**—Montreal advices state that an immediate reduction is to be made in the railway fares throughout Canada from 2·3 c. to 1·725 c. a mile, under the "back to the land" movement. Rates for settlers' children are correspondingly reduced, and those for the carriage of settlers' goods have been cut by half. With the object of giving Canadians an opportunity of visiting relatives in Great Britain, the steamship companies have announced special excursion return fares. The tourist third class fare will be available at one third of the ordinary East-bound fare from October 22 until April 30, 1935.

**Transport of Refrigerated Rabbits.**—An experiment of great interest to all connected with the long distance transport of perishables was carried out between September 11 and 12 by Marsh & Son, of Billingsgate, in co-operation with the Traffic Manager of the Southern Railway and Imperial Chemical Industries Limited. A consignment of fresh rabbits was successfully conveyed from Launceston, Cornwall, to Billingsgate in a road-rail insulated container supplied by the railway company. The container was refrigerated with Drikold, the solid carbon dioxide refrigerant, suspended from the roof in cartons designed by the manufacturers of the refrigerant. The consignment consisted of 31 crates each containing 36 rabbits and was loaded into the container at 2 p.m. on September 11. On arrival

at Billingsgate the following morning at 5 a.m., the container was opened, and despite the fact that exceptionally sultry weather prevailed throughout the journey, the rabbits were found to be in as fresh conditions as when packed. Not a single carcase was condemned and an exceptionally good price was realised in the market.

#### Railway Students' Association

**Presidential Address.**—The presidential address to be delivered by Sir William Beveridge to the Railway Students' Association of the London School of Economics has had to be postponed from Thursday, October 18, to Tuesday, October 30, at 6 p.m.

#### Stirling-Balloch Line Closed.

—The old Forth and Clyde Railway of the L.N.E.R., from Stirling to Balloch, was closed for passenger traffic on Saturday, September 29. The line was completed 80 years ago by the Forth and Clyde Junction Railway Company, and was leased in 1871 to the former North British Railway. We referred, on page 238 of our issue of August 10, to the alternative arrangements for road conveyance of passengers.

#### L.M.S. Improvement Scheme at Lawley Street Goods Depot, Birmingham.

—An improvement scheme which is being carried out by the L.M.S.R. at the Lawley Street (Birmingham) goods depot involves the provision of 42 additional wagon berths, together with better facilities for the loading and unloading of cartage vehicles. The Lawley Street depot deals with approximately 300,000 tons per annum, which necessitates over 275 wagons being loaded away each day to 130 different destinations. When the new works now in hand are completed, the Lawley Street shed will provide sufficient wagon berths to enable a wagon to be positioned for every station to which loads are usually made each day.

#### L.M.S.R. (London) Amateur Dramatic Society's Production.

—Although "The Farmer's Wife" is so rich in humour of dialogue and situation, it is a courageous choice for an amateur company on account of its dependence upon the West Country accent and idiom. The production of this famous Eden Phillpott's comedy by the L.M.S.R. (London) Amateur Dramatic Society at the Cripplegate Institute theatre on October 8 and 9 was almost as remarkable for the success with which this difficulty was tackled as for the competence with which it held and entertained the audience from start to finish. The earthy wit and scathing philosophy of that classic rustic, Churdles Ash, rolled forth in rich Devonian from the lips of Mr. Arthur Tucker. Don Davis, as the widower, Samuel Sweetland, was robustly amusing, and his daughters, played by K. Myrra Collins and Nancy McIntosh, found their matrimonial deserts to the satisfaction of all present

in the bashful but determined George Smerdon of K. C. Winterton and the well-groomed Richard Coaker of Frank Parsons. Don Humphries, Marjorie Ellisdon, Marjorie Groves, and William Southern, all made their parts memorable. As the Rev. Septimus Tudor, Mr. D. S. Barrie adorned the situation and solicited contributions to his harvest festival with bland but saintly opportunism. Mr. W. F. Humphreys, the producer, must be congratulated on an excellent performance.

#### Birmingham Town Hall Centenary.

—In connection with the centenary of the opening of the Birmingham Town Hall, which was celebrated on Thursday of last week, *The Times Weekly Edition* included an illustrated section devoted to the remarkable growth and progress of the city during the past hundred years, and its civic, social and industrial activities at the present time.

#### Shunting Locomotives for China.

—As announced in our Contracts and Tenders columns last week, four 0-8-0 shunting locomotives with double bogie tenders have been ordered for service on the Yueh-Han line of the standard gauge Canton-Hankow Railway from Sir W. G. Armstrong Whitworth (Engineers) Limited. These engines will exert a tractive effort of 25,400 lb. and will weigh 78 tons exclusive of tender.

#### The Week's Road Accidents.

—The Ministry of Transport return for the week ended October 6 of persons killed or injured in road accidents is as follows:—

	Killed	Deaths resulting from previous accidents	Injured
England ..	94 (79)	35 (26)	4,139 (4,282)
Wales ..	4 (7)	3 (1)	161 (188)
Scotland ..	6 (13)	2 (4)	406 (419)
	104 (99)	40 (31)	4,706 (4,889)

The total fatalities of the week, as the result of road accidents, were, therefore, 144, as compared with 130 for the previous week.

**Dorman Long New Board.**—The directors of Dorman, Long & Co. Ltd. issued on Wednesday the following official statement:—The reconstitution of the board is nearly completed. The new board will be eight in number, composed of three members nominated by the committee of five-and-a-half per cent. debenture stockholders; four nominated from the present board, three of whom will be executive directors; and the Right Hon. Lord Greenwood, P.C., K.C., who has accepted the position of Chairman. In agreement with their colleagues the following directors will retire:—The Hon. Roland D. Kitson, who has acted temporarily as Chairman, and Messrs. C. L. Dalziel, Ivor L. Johnson, J. B. Peat, and Francis Samuelson, who agreed to continue in office pending the completion of a scheme of reconstruction. The scheme of reconstruction is now agreed and will be published as soon as the directions of the Court can be obtained.



## British and Irish Traffic Returns

GREAT BRITAIN	Totals for 40th Week			Totals to Date		
	1934	1933	Inc. or Dec.	1934	1933	Inc. or Dec.
L.M.S.R. (6,941½ mls.)	£	£	£	£	£	£
Passenger-train traffic...	461,000	453,000	+ 8,000	19,585,000	19,281,000	+ 304,000
Merchandise, &c. ...	474,000	464,000	+ 10,000	17,655,000	16,385,000	+ 1,270,000
Coal and coke ...	217,000	220,000	- 3,000	8,918,000	8,513,000	+ 405,000
Goods-train traffic ...	691,000	684,000	+ 7,000	26,573,000	24,898,000	+ 1,675,000
Total receipts ...	1,152,000	1,137,000	+ 15,000	46,158,000	44,179,000	+ 1,979,000
L.N.E.R. (6,339 mls.)						
Passenger-train traffic...	293,000	288,000	+ 5,000	12,643,000	12,427,000	+ 216,000
Merchandise, &c. ...	340,000	324,000	+ 16,000	12,299,000	11,365,000	+ 934,000
Coal and coke ...	220,000	212,000	+ 8,000	8,987,000	8,209,000	+ 778,000
Goods-train traffic ...	560,000	536,000	+ 24,000	21,286,000	19,574,000	+ 1,712,000
Total receipts ...	853,000	824,000	+ 29,000	33,929,000	32,001,000	+ 1,928,000
G.W.R. (3,750½ mls.)						
Passenger-train traffic...	189,000	186,000	+ 3,000	8,304,000	8,309,000	- 5,000
Merchandise, &c. ...	191,000	186,000	+ 5,000	7,121,000	6,680,000	+ 461,000
Coal and coke ...	96,000	97,000	- 1,000	3,945,000	3,851,000	+ 94,000
Goods-train traffic ...	287,000	283,000	+ 4,000	11,066,000	10,511,000	+ 555,000
Total receipts ...	476,000	469,000	+ 7,000	19,370,000	18,820,000	+ 550,000
S.R. (2,176 mls.)						
Passenger-train traffic...	273,000	271,000	+ 2,000	12,002,000	11,824,000	+ 178,000
Merchandise, &c. ...	56,500	55,000	+ 1,500	2,530,000	2,423,500	+ 106,500
Coal and coke ...	21,500	22,000	- 500	1,227,000	1,155,500	+ 71,500
Goods-train traffic ...	78,000	77,000	+ 1,000	3,757,000	3,579,000	+ 178,000
Total receipts ...	351,000	348,000	+ 3,000	15,759,000	15,403,000	+ 356,000
Liverpool Overhead ...	1,028	1,063	- 35	45,969	45,531	+ 438
Mersey (4½ mls.) ...	4,246	4,280	- 34	162,174	158,575	+ 3,599
*London Passenger Transport Board ...	548,400	541,100	+ 7,300	7,399,900	7,320,100	+ 79,800
IRELAND.						
Belfast & C.D. pass. (80 mls.)	2,195	2,146	+ 49	105,217	107,019	- 1,802
" " goods	557	538	+ 19	20,407	20,659	- 252
" " total	2,752	2,684	+ 68	125,624	127,678	- 2,054
Great Northern pass. (562 mls.)	10,600	9,300	+ 1,300	409,600	313,900	+ 95,700
" " goods	9,650	8,700	+ 950	333,600	259,850	+ 73,750
" " total	20,250	18,000	+ 2,250	743,200	573,750	+ 169,450
Great Southern pass. (2,158 mls.)	27,306	24,639	+ 2,667	988,254	977,243	+ 11,011
" " goods	39,201	38,113	+ 1,088	1,283,015	1,203,280	+ 79,735
" " total	66,507	62,752	+ 3,755	2,271,269	2,180,523	+ 90,746

\* 14th week the receipts for which include those undertakings not absorbed by the L.P.T.B. in the corresponding period last year; last year's figures are, however, adjusted for comparative purposes

## Forthcoming Events

- Oct. 12 (Fri.).—Railway Club, 57, Fetter Lane, London, E.C.4, 7.30 p.m. "Punch's Railway (The West London Railway)," by Mr. D. V. Leven.
- Federation of Railway Lecture and Debating Societies (N.E. Area), at Railway Inst., Queen Street, York, 7 p.m. "Some Aspects of Education," by Mr. Wm. Whitelaw.
- Railway Students' Association (Edinburgh), at Gould Hall, St. Andrew Square, 7.30 p.m. "Some Aspects of Railway Working," Presidential Address by Mr. R. Marshall.
- Oct. 13 (Sat.).—Institute of British Foundrymen (Scottish), at Royal Technical College, George Street, Glasgow, 4 p.m. "The Position of the Designer and Patternmaker in Relation to Foundry Practice and Competitive Methods of Producing Castings," by Mr. A. L. Mortimer.
- Oct. 15 (Mon.).—Institution of Welding Engineers (Middlesbrough), at Cleveland Scientific and Technical Inst., Corporation Road, 7.30 p.m. Film: "Resistance Welding Machines," Commentary by Mr. A. C. Crookell.
- G.W.R. (Birmingham) Lecture and Debating Society, at Great Western Hotel, 6.30 p.m. "Mediterranean Cruises," by Mr. C. Jones.
- Oct. 16 (Tues.).—Institute of Transport (London), at Inst. of Electrical Engineers, Savoy Place, W.C.2, 6 p.m. "Practical and Economic Considerations in the Study of Transport," by Mr. D. R. Lamb.
- Oct. 16 (Tues.).—Industrial Transport Assoc., at British Iron and Steel Federation, Caxton House (East), Tothill Street, S.W.1, 6.30 p.m. "Aerial Ropeways," by Mr. R. H. Pearson.
- Oct. 17 (Wed.).—Institution of Locomotive Engineers (Birmingham), at Queen's Hotel, 6.45 p.m. Presidential Address by Mr. H. N. Gresley.
- L.N.E.R. (Darlington) Lecture and Debating Society, at North Road Inst., 7.20 p.m. "Some Aspects of the Block Telegraph Regulations," by Mr. W. Candler.
- Oct. 18 (Thurs.).—G.W.R. (London) Lecture and Debating Society, in General Meeting Room, Paddington Station, 5.45 p.m. "Railway Publicity," by Mr. G. E. Orton.
- Institution of Locomotive Engineers (Scottish), at Royal Technical College, George Street, Glasgow, 7.30 p.m. "Anti-Vacuum or Snifting Valves," by Mr. S. Griffiths.
- London School of Economics, Houghton Street, London, W.C.2, 5 p.m. "The Waterbus," by Mr. J. H. O. Bunge.
- Oct. 19 (Fri.).—Institution of Mechanical Engineers. Annual Dinner.
- Oct. 23 (Tues.).—Institute of Transport (Metropolitan Graduate), at Inst. of Electrical Engineers, Savoy Place, W.C.2, 6 p.m. Inaugural Meeting and Presidential Address by Mr. Sidney E. Garcke.
- Oct. 30 (Tues.).—Railway Students' Association, at London School of Economics, Houghton Street, W.C.2, 6 p.m. "Civil Service Methods in Business," Presidential Address by Sir Wm. Beveridge.

## British and Irish Railways Stocks and Shares

Stocks	Highest 1933	Lowest 1933	Prices	
			Oct. 10, 1934	Rise/ Fall
G.W.R.				
Cons. Ord. ...	551 <sup>2</sup> <sub>2</sub>	31	531 <sup>2</sup> <sub>2</sub>	-1
5% Con. Prefce. ...	109 <sup>3</sup> <sub>4</sub>	69 <sup>1</sup> <sub>2</sub>	112	-1 <sup>2</sup> <sub>2</sub>
5% Red. Pref.(1950) ...	109 <sup>1</sup> <sub>4</sub>	87 <sup>1</sup> <sub>2</sub>	109 <sup>1</sup> <sub>2</sub>	—
4% Deb. ...	108 <sup>15</sup> <sub>16</sub>	99 <sup>1</sup> <sub>4</sub>	109 <sup>1</sup> <sub>2</sub>	—
4½% Deb. ...	108	100 <sup>3</sup> <sub>4</sub>	111 <sup>1</sup> <sub>2</sub>	—
4½% Deb. ...	116	106	119 <sup>1</sup> <sub>2</sub>	—
5% Deb. ...	128	117 <sup>1</sup> <sub>4</sub>	130	—
2½% Deb. ...	65	60	70 <sup>1</sup> <sub>2</sub>	—
5% Rt. Charge ...	124	111 <sup>1</sup> <sub>2</sub>	128 <sup>1</sup> <sub>2</sub>	—
5% Cons. Guar. ...	122	103	126	—
L.M.S.R.				
Ord. ...	297 <sup>7</sup> <sub>8</sub>	121 <sup>3</sup> <sub>8</sub>	22	-1 <sup>1</sup> <sub>2</sub>
4% Prefce. (1923) ...	51	17	52	-1
4% Prefce. ...	72	33 <sup>1</sup> <sub>4</sub>	81	+1 <sup>2</sup> <sub>2</sub>
5% Red. Prf. (1955) ...	93	47 <sup>1</sup> <sub>4</sub>	100 <sup>1</sup> <sub>2</sub>	—
4% Deb. ...	103 <sup>1</sup> <sub>4</sub>	89 <sup>1</sup> <sub>2</sub>	105	+1 <sup>2</sup> <sub>2</sub>
5% Red. Deb.(1952) ...	114	105	115 <sup>1</sup> <sub>2</sub>	+1
4% Guar. ...	97 <sup>1</sup> <sub>4</sub>	68 <sup>5</sup> <sub>8</sub>	101	—
L.N.E.R.				
5% Pref. Ord. ...	221 <sup>2</sup> <sub>2</sub>	73 <sup>4</sup> <sub>4</sub>	163 <sup>4</sup> <sub>4</sub>	-1 <sup>1</sup> <sub>4</sub>
Def. Ord. ...	103 <sup>4</sup> <sub>4</sub>	41 <sup>8</sup> <sub>8</sub>	81 <sup>8</sup> <sub>8</sub>	-5 <sup>8</sup> <sub>8</sub>
4% First Prefce. ...	65 <sup>1</sup> <sub>2</sub>	19 <sup>3</sup> <sub>8</sub>	68	-1 <sup>2</sup> <sub>2</sub>
4% Second Prefce. ...	40 <sup>1</sup> <sub>2</sub>	12 <sup>1</sup> <sub>4</sub>	33	-1 <sup>1</sup> <sub>2</sub>
5% Red. Pref.(1955) ...	83 <sup>4</sup> <sub>4</sub>	27	86 <sup>1</sup> <sub>2</sub>	—
4% First Guar. ...	94 <sup>4</sup> <sub>4</sub>	58 <sup>1</sup> <sub>4</sub>	96 <sup>1</sup> <sub>2</sub>	—
4% Second Guar. ...	89 <sup>1</sup> <sub>4</sub>	48	90 <sup>1</sup> <sub>2</sub>	—
3% Deb. ...	77	60 <sup>1</sup> <sub>4</sub>	79	+1 <sup>2</sup> <sub>2</sub>
4% Deb. ...	102 <sup>3</sup> <sub>4</sub>	80	103	—
5% Red. Deb.(1947) ...	112	102 <sup>1</sup> <sub>2</sub>	111	—
4½% Sinking Fund Red. Deb.	107 <sup>1</sup> <sub>2</sub>	98 <sup>3</sup> <sub>4</sub>	108 <sup>1</sup> <sub>2</sub>	—
SOUTHERN				
Pref. Ord. ...	71	27 <sup>3</sup> <sub>4</sub>	74	-1
Def. Ord. ...	24 <sup>3</sup> <sub>8</sub>	9 <sup>3</sup> <sub>8</sub>	22 <sup>1</sup> <sub>2</sub>	-1
5% Prefce. ...	107 <sup>11</sup> <sub>16</sub>	74	112	—
5% Red. Pref.(1964) ...	107 <sup>3</sup> <sub>4</sub>	78 <sup>7</sup> <sub>8</sub>	111 <sup>1</sup> <sub>2</sub>	—
5% Guar. Prefce. ...	124 <sup>1</sup> <sub>4</sub>	102 <sup>3</sup> <sub>4</sub>	125 <sup>1</sup> <sub>2</sub>	—
5% Red. Guar. Pref. (1957) ...	115 <sup>5</sup> <sub>8</sub>	103 <sup>1</sup> <sub>2</sub>	115	—
4% Deb. ...	107 <sup>1</sup> <sub>2</sub>	96 <sup>3</sup> <sub>4</sub>	109	—
5% Deb. ...	126 <sup>1</sup> <sub>2</sub>	114 <sup>1</sup> <sub>4</sub>	129 <sup>1</sup> <sub>2</sub>	—
4% Red. Deb. ...	107 <sup>1</sup> <sub>4</sub>	100	109 <sup>1</sup> <sub>2</sub>	—
1962-67				
BELFAST & C.D.				
Ord. ...	6	5	5	—
FORTH BRIDGE				
4% Deb. ...	99 <sup>1</sup> <sub>2</sub>	95 <sup>1</sup> <sub>2</sub>	102 <sup>1</sup> <sub>2</sub>	—
4% Guar. ...	98 <sup>1</sup> <sub>2</sub>	94	102 <sup>1</sup> <sub>2</sub>	—
G. NORTHERN (IRELAND)				
Ord. ...	71 <sup>2</sup> <sub>2</sub>	31 <sup>2</sup> <sub>2</sub>	7	—
G. SOUTHERN (IRELAND)				
Ord. ...	28	16	14	—
Prefce. ...	24	12 <sup>1</sup> <sub>8</sub>	16 <sup>1</sup> <sub>2</sub>	—
Guar. ...	42	16 <sup>3</sup> <sub>4</sub>	46	—
Deb. ...	60	30 <sup>7</sup> <sub>8</sub>	60 <sup>1</sup> <sub>2</sub>	+1 <sup>2</sup> <sub>2</sub>
L.P.T.B.				
4½% "A" ...	117 <sup>7</sup> <sub>8</sub>	112	121 <sup>1</sup> <sub>2</sub>	—
5% "A" ...	127 <sup>1</sup> <sub>4</sub>	119 <sup>1</sup> <sub>4</sub>	131 <sup>1</sup> <sub>2</sub>	—
4½% "T.F.A." ...	111 <sup>1</sup> <sub>4</sub>	106	111 <sup>1</sup> <sub>2</sub>	—
5% "B" ...	122 <sup>1</sup> <sub>2</sub>	114	125 <sup>1</sup> <sub>2</sub>	-1 <sup>2</sup> <sub>2</sub>
5% "C" ...	86 <sup>3</sup> <sub>4</sub>	74 <sup>1</sup> <sub>2</sub>	86	+2
MERSEY				
Ord. ...	16 <sup>1</sup> <sub>4</sub>	5	9	-2
4% Perp. Deb. ...	83	63 <sup>7</sup> <sub>8</sub>	86 <sup>1</sup> <sub>2</sub>	—
3% Perp. Deb. ...	62	51	64 <sup>1</sup> <sub>2</sub>	—
3% Perp. Prefce. ...	50 <sup>5</sup> <sub>8</sub>	27	47 <sup>1</sup> <sub>2</sub>	—

## CONTRACTS AND TENDERS

The Swedish State Railways Administration has bought 44,000 tons of coal, all British, namely, Broomhill, Maude, Hastings, West Hartley Main, Newbiggin, Wemyss, Lambton, and South Hetton. The prices range from 16s. 6d. to 19s. 8½d. a ton.

In addition to the orders placed by Charrington, Gardner, Locket & Co. Ltd. for 12-ton coal wagons noted in this column in last week's issue, further orders for wagons of the same capacity have now been placed with Metropolitan-Cammell Carriage Wagon & Finance Co. Ltd., Gloucester Railway Carriage & Wagon Co. Ltd. and Hurst, Nelson & Co. Ltd.

### Roller Bearings for Queensland

British Timken Limited has received an important order for roller bearings from the Queensland Government Railways. The order is for bearings for the equipment of twenty-seven main-line coaches. Of this number eight complete axleboxes will be supplied and bearings only for the remainder, for which the axleboxes will be manufactured in Australia.

The Associated Equipment Co. Ltd. has received an order from the London Passenger Transport Board for 100 Q type single deck buses with A.E.C.-Ricardo oil engines. These vehicles are of the new side-engined type in which all available body space is utilised for passenger accommodation.

The Associated Equipment Co. Ltd. has also received orders for 12 additional Regent oil-engined double-deck vehicles for the Halifax Corporation Tramways & Motors.

The Krupp Indian Trading Co. Ltd. has received an order from the Indian Stores Department for 700 broad gauge 16-ton axles for the East Indian Railway at a total price of Rs. 97,825; and Wright, Pinhorn & Partners Limited has received an order for 800 similar axles for the same railway at a price of Rs. 1,11,500.

The Indian Stores Department has placed running contracts with B. M. Singh & Son and Mather & Platt Limited respectively for the supply of spares for Stone's train lighting dynamos for the G.I.P., E.I., and E.B. Railways, and for Mather & Platt train lighting dynamos. A rate contract has also been placed with Jessop & Co. Ltd. for one year's supply of files. These files will be made by the Nicholson File Company.

The Birmingham Railway Carriage & Wagon Co. Ltd. has received an order from the Porbandar State Railways for one metre gauge 64 ft. bogie carriage underframe for a special saloon for the Maharajah. The bogies are to be of the Sheffield-Twinberrow patent type, and the complete underframe will be supplied to the inspection of the consulting engineers, Messrs. Robert White & Partners.

Cowans Sheldon & Co. Ltd. has received an order from the Mysore State Railways for two metre-gauge 5-ton hand-powered breakdown cranes to be supplied to the inspection of the consulting engineers, Messrs. Rendel, Palmer & Tritton.

Stothert & Pitt Limited has received an order from the Peruvian Corporation for one concrete mixer complete with diesel engine.

The Birmingham Railway Carriage & Wagon Co. Ltd. has received an order from the Central Argentine Railway for 360 high tensile steel ratchet screw couplings.

John Baker & Bessemer Limited has received an order from the Buenos Ayres Western Railway for 310 steel carriage and wagon tyres.

George Spencer Moulton & Co. Ltd. has received an order for 4,770 india-rubber springs from the Buenos Ayres Western Railway.

C. M. Hill & Co. Ltd., on behalf of Usines et Acieries Allard, has received an order from the Central Argentine Railway for 500 cast steel axleboxes for carriages and wagons.

H. J. Skelton & Co. Ltd. has received an order from the Egyptian State Railways Administration for steel joists (Order No. 1,149 of June 30) at a total price of £1,494 5s. delivered c.i.f. Gabbary, Alexandria.

### Persian Railway Orders in Poland

Reuters Trade Service reports from Warsaw that following the visit to Persia of a delegation of the Polish iron and steel industry, a Polish iron works has received from the Persian Government Railways an order for 5,000 tons of railway material. The value of the order exceeds 1,500,000 zloty (about £57,700 at the present rate of exchange).

Stork Bros., N.V., of Hengelo, Holland, has received an order from the Netherlands Railways for 21 diesel engines of 72/85 b.h.p., of the Stork-Ganz type, for installation in diesel-electric loco-tractors of the class described in the *Diesel Railway Traction Supplement* for September 7.

Swan, Hunter and Wigham Richardson Limited has received an order from the L.N.E.R. for gates for one of the company's docks at Hull.

The South African Government Railways and Harbours Board has placed orders with the Barrow Haematite Steel Co. Ltd. and the Lancashire Steel Corporation for 1,000 tons and 500 tons of steel rails respectively.

Orders have been placed on behalf of the New Zealand Government Railways Administration for steel tyres and axles to a total value of approximately £5,000 divided among John Baker and Bessemer Limited; Thomas Firth and John Brown Limited; and the Steel Company of Scotland.

The Chief Controller of Stores, Indian Stores Department (Miscellaneous Sec-

tion) invites tenders receivable by October 22 for 35,567 vacuum brake hose pipes.

The Chief Controller of Stores, Indian Stores Department (Engineering Section) invites tenders receivable by October 22 for a total of 62 straight axles for locomotives.

The Chief Controller of Stores, Indian Stores Department (Engineering Section), Simla, invites tenders receivable by November 7 for a one hundred line fire alarm system complete and consisting of electric tell-tale clock and other equipment for the North Western Railway carriage and wagon shops, Lahore.

The Chief Engineer, Eastern Bengal Railway, 3, Koilaghat Street, Calcutta, invites tenders receivable by October 24 for the supply of two steel bridge girder spans for a bridge over the municipal sewer at Beliaghata yard.

The Bengal-Nagpur Railway Administration is calling for tenders receivable at 132, Gresham House, Old Broad Street, London, E.C.2, by October 19 for 5,500 wagon door check springs and 800 drawbar springs.

### Enquiries for Wagon for Egypt

The Egyptian State Railways Administration invites tenders receivable on January 2, 1935, at the General Management, Cairo, for standard gauge 10-ton all-steel box trucks. Alternative enquiries are made for batches of 100, 150, 200 and 250. Conditions of tender may be obtained from the Chief Inspecting Engineer's Office, 41, Tothill Street, Westminster, S.W.1.

The Argentine State Railways Administration is calling for tenders, to be presented in Buenos Aires by November 8, for the supply of two wheel lathes for wagon wheels of 1,000 mm. gauge mounted on axles. Firms desirous of offering wheel lathes of United Kingdom manufacture can obtain the further details from the Department of Overseas Trade.

The Argentine State Railways Administration is calling for tenders, to be presented in Buenos Aires by December 5, for the supply of a machine for boring and machining locomotive and other machine parts. Firms desirous of offering a machine of United Kingdom manufacture can obtain the further details of this call for tenders from the Department of Overseas Trade.

A TRANSPORT POSTER BY EPSTEIN.—Lovers of the Epstein school will inevitably wax enthusiastic over the latest production of the master, which takes the form of a somewhat striking and certainly colourful poster entitled "Epping Forest," and is now on view on the L.N.E.R. main line system and on all stations and properties of London Transport within the London Transport area. The poster (which is the first to carry both the L.N.E.R. and L.T. emblems) has the characteristic Epstein touch.

## OFFICIAL NOTICES

## South Indian Railway Company Limited

THE Directors are prepared to receive Tenders for the supply of:—  
1.—STEEL BARS, SECTIONS, &c.  
2.—ANTI-CORROSIVE PAINT.

Specifications and Forms of Tender will be available at the Company's Offices, 91, Petty France, Westminster, S.W.1.  
Tenders, addressed to the Chairman and Directors of the South Indian Railway Co. Ltd., marked "Tender for Steel Bars, etc.," or as the case may be, with the name of the firm tendering, must be left with the undersigned not later than 12 noon on Friday, the 26th October, 1934, in respect of Specification No. 1, and not later than 12 noon on Friday, the 19th October, 1934, in respect of Specification No. 2.

The Directors do not bind themselves to accept the lowest or any Tender.

A charge, which will not be returned, will be made of 5s. for each copy of each Specification.

A. MUIRHEAD,  
Managing Director.

91, Petty France,  
Westminster, S.W.1.  
10th October, 1934.

## Bengal-Nagpur Railway Company Limited

THE Directors are prepared to receive Tenders for:—

5,500 WAGON DOOR CHECK SPRINGS and  
800 DRAWBAR SPRINGS.

Specification and Form of Tender can be obtained at the Company's Offices, 132, Gresham House, Old Broad Street, London, E.C.2, on or after Monday, 8th October, 1934.

A fee of 10s. will be charged for each copy of the Specification, which is NOT returnable.

Tenders must be submitted not later than NOON on Friday, 19th October, 1934.

The Directors do not bind themselves to accept the lowest or any Tender and reserve to themselves the right of reducing or dividing the order.

By Order of the Board,  
R. GRANT,  
Secretary.

## Central Argentine Railway Limited

NOTICE is hereby given that the Transfer Books of the 5 per Cent. Redeemable Debenture Stock, 1967-1987, of the Company will be closed on the 11th October, 1934, for one day only, for the preparation of Warrants for Interest for the six months ending 31st October, 1934.

F. FIGHIERA,  
Secretary.

34, Coleman Street,  
London, E.C.2.

## OFFICIAL ADVERTISEMENTS

OFFICIAL ADVERTISEMENTS intended for insertion on this page should be sent in as early in the week as possible. The latest time for receiving official advertisements for this page for the current week's issue is noon on Thursday. All advertisements should be addressed to:—The Railway Gazette, 33, Tothill Street, Westminster, London, S.W.1.

## RAILWAY AND OTHER REPORTS

**Taltal Railway.**—After transferring £20,000 from general reserve account the directors recommend the payment of a balance dividend of 1s. per share, less income tax at 4s. 6d. in the £, making with the interim dividend 2s. per share, less income tax, for the year to June 30, 1934, equal to 2 per cent. per annum.

**South Indian Railway.**—The directors have decided to recommend that a final dividend for the year 1934 of 2½ per cent. less income tax be made from surplus profits on January 1, 1935, making with the guaranteed interest of 1½ per cent. payable on the same date, a total payment of 4½ per cent. less income tax, for the half year ending December 31, 1934, and together with the payment that was made on July 2, 1934 (namely, 3½ per cent.) a total payment of 8 per cent. for the year, being the same as the dividend paid for the previous year.

**Barsi Light Railway.**—Net earnings for the year to March 31, 1934, less Indian income tax and super tax, amounted at 1s. 6d. exchange to £53,812. After crediting investment, income, &c., and £7,269 brought forward, as well as £2,000 transferred from taxation account, and after providing for debenture interest and other prior charges, there is a balance of £53,357, which enables a dividend of 6 per cent. for the year to be paid on the ordinary stock, leaving £7,608 to be carried forward. Gross receipts were Rs. 20,02,325, an increase of Rs. 67,293 in comparison with the previous year, and working expenses at Rs. 11,95,230 were Rs. 32,195 lower, representing 59.69 per cent. on gross earnings, as against 63.43 per cent. In accordance with the resolution passed at the general meeting on October 10, 1933, the £10 ordinary and convertible preference shares have been converted respectively

into ordinary stock and cumulative preference stock.

**Antofagasta (Chili) & Bolivia Railway.**—The directors announce that, based on the official rates of exchange, the results for the current year to date show improvement compared with the corresponding period of 1933, but in consequence of the restrictions on exchange operations the company's funds in Chile and Bolivia continue to accumulate. In those circumstances, the directors have decided to defer consideration of a payment on account of the arrears of dividend on the 5 per cent. cumulative preference stock until about May next, when the final accounts for the year 1934 will be available. The dividend on the stock is in arrear as from January 1, 1932.

**North Eastern of Uruguay Railway.**—The report for the year to June 30, 1934, states that, owing to the control exercised over all foreign exchange by the Bank of the Republic on behalf of the Uruguayan Government, the Central Uruguay Railway is still unable to obtain sufficient sterling remittances to meet in full its fixed liabilities, and it has therefore been decided by the committee of stockholders, appointed under the scheme of arrangement passed in September last, that the moratorium shall be extended until September 30, 1935. The reduced sums payable by the Central Uruguay Railway in accordance with the moratorium have been duly received in the year under review. The balance on revenue account is £10,850, out of which the board recommends the payment of a balance dividend of 1½ per cent., less income tax, upon the preference shares, making with the interim dividend 3½ per cent. for the year, and a balance dividend of 1½ per cent., less income tax, upon the ordinary shares, making with the interim dividend 3½ per cent. for

the year, which will absorb the amount available.

**George Turton, Platts & Co. Ltd.**—The directors report an expansion in net profits from £11,484 for 1932-33 to £25,460 for the year ended July 31 last. It is proposed to pay a final dividend of 7½ per cent., making 10 per cent. for the year, against 5 per cent., and to place £5,000 (against nil) to reserve, making that fund £30,000. In addition, £1,150 (against nil) is written off goodwill and patents, and the balance forward increased from £4,663 to £11,539.

**Metropolitan-Cammell Carriage Wagon & Finance Co. Ltd.**—We are informed by the Metropolitan-Cammell Carriage Wagon & Finance Co. Ltd. that it has been decided to reorganise the capital of the company, and to carry this into effect notices have been issued for an extraordinary general meeting to be held on October 31, so that a new company may be formed, the present company being put into voluntary liquidation as a mere formality. The new company will be named Metropolitan-Cammell Carriage & Wagon Co. Ltd. and will take over the business, property and assets of the existing company, and will discharge all liabilities existing at the date of transfer, and will carry on the business as before. The capital of the new company will be held by the present shareholders in the existing company, viz., Vickers Limited and Cammell Laird & Co. Ltd.

**THE RAILWAY CLUB.**—At the meeting on September 14, Mr. E. Wallis conducted a "Railway Observation Prize Competition," illustrated with some forty lantern slides, depicting views on British railways. After each slide had been shown, competitors were invited to write down the answers to the following questions: (1) Where is it? (2) On which pre-grouping railway was it? (3) On which system is it to-day? This novel idea proved a great success.



## Railway Share Market

In the stock and share markets this week the tragic events at Marseilles exercised only a temporary adverse influence and mainly on international securities. Conditions in the home markets, which include railway stocks, were unaffected. The slight reaction in prices of home railway stocks on Wednesday was due more to disappointment with the weekly traffic receipts than to any external influence. The movement in prices was small and did not off-set the rise which has been taking place since the end of last month.

Southern issues were favoured over this period and the preferred ordinary stock shows an advance of four points whilst L.M.S. first preference stock and the 1923 issue record rises of two and  $4\frac{1}{2}$  points respectively over the fortnight. The record of business in Great Western ordinary has been steady and in the L.N.E.

preference stocks it has been very active on the encouraging reports received about improving conditions in the steel industry and the fall in the unemployment figures. Investors who take the long view are still buying London Passenger Transport Board "C" stock which has now recovered to 86 $\frac{1}{2}$ , the highest price this year and within a fraction of the best price touched since the stock was created. The yield is 3 $\frac{3}{4}$  per cent. on the basis of the 3 per cent. dividend paid for the past year. Foreign railway stocks have not attracted much attention apart from occasional buying of lines of Argentine railway preference stocks in anticipation of the forthcoming reports exercising a favourable influence on current views of the Argentine outlook. Buenos Ayres Great Southern 5 per cent. preference stock was marked up 3 $\frac{1}{2}$  points as a result of Monday's buying but came back 1 $\frac{1}{2}$  on the following day when the higher price

had attracted sellers to the market. Dealers in this market are making "wide" prices pending the issue of the reports. Antofagasta stock and Nitrate Railway shares were both higher on news that the Lautaro Nitrate Company is to reopen part of its plant but profit-taking occurred in the latter shares.

Mexican Railway stocks were influenced favourably by the improving traffic of the National Railroads of Mexico. Indian railway stocks continued to receive attention but supply of stock is limited. Bengal Doonars, which declares a final dividend of 4 per cent., making 7 per cent. for the year, was last dealt in at 125 on September 10. Barsi Light stock, which is dealt in in this market, was raised two points to 97-102 against 70 a year ago. Canadian Pacific shares had a sharp rise in mid-week which was attributed to bear repurchases made when the market opened nervously on Wednesday.

### Traffic Table of Overseas and Foreign Railways Publishing Weekly Returns

Railways	Miles open 1933-34	Week Ending	Traffic for Week		No. of Week	Aggregate Traffic to Date			Shares or Stock	Prices				
			Total this year	Inc. or Dec. compared with 1933		Totals		Increase or Decrease		Highest 1933	Lowest 1933	Oct. 10, 1934	Yield % (See Note)	
						This Year	Last Year							
South & Central America.														
Antofagasta (Chili) & Bolivia	830	7.10.34	18,390	+ £ 4,360	40	£ 570,050	£ 428,930	+ £ 141,120	Ord. Stk.	26	113 $\frac{1}{2}$	26	Nil	
Argentine North Eastern ..	753	6.10.34	8,379	- 445	14	111,007	144,074	- 33,067	"	141 $\frac{1}{2}$	5	92 $\frac{1}{2}$	Nil	
Argentine Transandine ..	111	—	—	—	—	—	—	—	A. Deb.	55	40	50	8	
Bolivar ..	170	Sept., 1934	5,200	- 350	39	54,350	57,200	- 2,850	6 p.c. Db.	10	5	10	Nil	
Brazil ..	—	—	—	—	—	—	—	—	Bonds.	15	11	131 $\frac{1}{2}$	31 $\frac{1}{2}$	
Buenos Ayres & Pacific ..	2,806	6.10.34	68,403	- 12,293	14	973,827	1,161,605	- 187,778	Ord. Stk.	26	97 $\frac{1}{2}$	12	Nil	
Buenos Ayres Central ..	190	15.9.34	125,200	+ \$20,200	11	\$1,480,100	\$1,432,200	+ \$47,900	Mt. Db.	30	10	23	Nil	
Buenos Ayres Gt. Southern ..	5,085	6.10.34	112,639	- 35,414	14	1,712,589	2,141,114	- 428,525	Ord. Stk.	441 $\frac{1}{2}$	211 $\frac{1}{2}$	29	Nil	
Buenos Ayres Western ..	1,930	6.10.34	38,034	- 14,162	14	577,420	727,381	- 149,961	"	341 $\frac{1}{2}$	155 $\frac{1}{2}$	24	Nil	
Central Argentine ..	3,700	6.10.34	110,547	- 12,775	14	1,740,282	1,890,658	- 150,376	"	281 $\frac{1}{2}$	15	18	Nil	
Do. ..	—	—	—	—	—	—	—	—	Mtd.	18	10	10	Nil	
Cent. Uruguay of M. Video	273	6.10.34	16,828	- 1,107	14	200,351	200,310	+ 41	Ord. Stk.	20	8	121 $\frac{1}{2}$	Nil	
Do. Eastern Extn. ..	311	6.10.34	3,185	- 22	14	41,069	36,008	+ 5,061	"	—	—	—	—	
Do. Northern Extn. ..	185	6.10.34	1,869	- 258	14	23,172	22,334	+ 838	"	—	—	—	—	
Do. Western Extn. ..	211	6.10.34	1,672	- 6	14	18,445	18,893	- 448	"	—	—	—	—	
Cordoba Central ..	1,218	6.10.34	26,160	- 15,600	14	446,570	589,940	- 143,370	Ord. Inc.	91 $\frac{1}{2}$	21 $\frac{1}{2}$	5	Nil	
Costa Rica ..	188	Aug., 1934	14,974	- 10,765	8	33,155	46,443	- 13,288	Stk.	29	20	30	611 $\frac{1}{2}$	
Dorada ..	70	Aug., 1934	11,300	+ 2,800	34	80,500	61,600	+ 18,900	1 Mt. Db.	761 $\frac{1}{2}$	685 $\frac{1}{2}$	105	511 $\frac{1}{2}$	
Entre Rios ..	810	6.10.34	12,598	+ 643	14	157,009	190,942	- 33,933	Ord. Stk.	261 $\frac{1}{2}$	9	15	Nil	
Great Western of Brazil ..	1,082	6.10.34	12,400	+ 2,400	40	310,500	377,300	- 66,800	Ord. Sh.	23 $\frac{1}{2}$	—	—	—	
International of Cl. Amer.	794	Aug., 1934	\$337,294	+ \$41,455	34	\$3,360,090	\$3,285,984	+ \$74,106	"	—	—	—	—	
Interoceanic of Mexico ..	223 $\frac{1}{2}$	Sept., 1934	3,045	- 705	39	32,865	46,520	- 13,655	1st Pref.	1 $\frac{1}{2}$	1 $\frac{1}{2}$	1 $\frac{1}{2}$	Nil	
La Guaira & Caracas ..	1,918	6.10.34	31,933	+ 5,974	40	1,019,035	993,509	+ 25,526	Stk.	16	10	81 $\frac{1}{2}$	Nil	
Leopoldina ..	483	30.9.34	\$207,500	- \$13,700	13	\$2,847,900	\$2,359,400	+ \$488,500	Ord. Stk.	201 $\frac{1}{2}$	10	11	Nil	
Mexican ..	319	Sept., 1934	8,302	- 933	13	25,851	24,899	+ 952	"	3	1 $\frac{1}{2}$	23 $\frac{1}{2}$	Nil	
Midland of Uruguay ..	401	30.9.34	3,777	- 4,609	39	186,287	97,226	+ 89,061	Ord. Sh.	78 $\frac{1}{2}$	11 $\frac{1}{2}$	31 $\frac{1}{2}$	Nil	
Nitrate ..	274	6.10.34	4,020	+ 820	14	64,350	51,820	+ 12,530	Pr. Li. Stk.	72	491 $\frac{1}{2}$	72	65 $\frac{1}{2}$	
Paraguay Central ..	1,059	Sept., 1934	63,773	+ 8,411	13	186,438	162,568	+ 23,870	Pref.	151 $\frac{1}{2}$	5	10	Nil	
Peruvian Corporation ..	100	29.9.34	\$10,130	+ \$4,373	13	\$125,737	\$178,913	- \$53,176	Pr. Li. Db.	70	661 $\frac{1}{2}$	70	71 $\frac{1}{2}$	
Salvador ..	153 $\frac{1}{2}$	30.9.34	32,300	- 1,054	39	1,177,794	1,176,636	+ 1,158	Ord. Stk.	102	68	82	4 $\frac{1}{2}$	
Taltal ..	164	Sept., 1934	4,795	- 1,520	13	18,270	13,350	+ 4,920	Ord. Sh.	15 $\frac{1}{2}$	3 $\frac{1}{2}$	2 $\frac{1}{2}$	5	
United of Havana ..	1,365	6.10.34	16,215	+ 6,719	14	237,691	181,209	+ 56,482	Ord. Stk.	8	2	41 $\frac{1}{2}$	Nil	
Uruguay Northern ..	73	Sept., 1934	1,241	+ 158	13	3,312	3,229	+ 83	Deb. Stk.	6	31 $\frac{1}{2}$	61 $\frac{1}{2}$	Nil	
Canada.														
Canadian National ..	23,736	30.9.34	894,599	+ 8,433	39	24,392,541	21,643,256	+ 2,749,285	—	—	—	—	—	
Canadian Northern ..	—	—	—	—	—	—	—	—	Perp. Dbs.	601 $\frac{1}{2}$	38	761 $\frac{1}{2}$	51 $\frac{1}{2}$	
Grand Trunk ..	—	—	—	—	—	—	—	—	4 p.c. Gar.	995 $\frac{1}{2}$	85	102	31 $\frac{1}{2}$	
Canadian Pacific ..	17,018	30.9.34	686,200	- 34,600	39	18,180,000	16,396,600	+ 1,783,400	Ord. Stk.	221 $\frac{1}{2}$	11	14	Nil	
India.														
Assam Bengal ..	1,322	8.9.34	26,197	+ 2,838	23	612,181	501,075	+ 111,106	Ord. Stk.	79	70	84	59 $\frac{1}{2}$	
Barsi Light ..	202	15.9.34	1,942	+ 105	24	70,635	70,485	+ 150	Ord. Sh.	1015 $\frac{1}{2}$	70	991 $\frac{1}{2}$	6	
Bengal & North Western ..	2,112	15.9.34	30,849	- 9,429	24	1,143,114	1,155,019	- 11,905	Ord. Stk.	292	240	283 $\frac{1}{2}$	59 $\frac{1}{2}$	
Bengal Doonars & Extension ..	161	15.9.34	3,025	- 172	24	65,998	66,076	- 78	"	127	119	126	59 $\frac{1}{2}$	
Bengal-Nagpur ..	3,289	8.9.34	100,200	- 742	23	2,536,823	2,326,361	+ 210,462	"	971 $\frac{1}{2}$	831 $\frac{1}{2}$	1041 $\frac{1}{2}$	31 $\frac{1}{2}$	
Bombay, Baroda & Cl. India ..	3,072	29.9.34	136,575	+ 10,350	26	3,851,025	3,669,675	+ 181,350	"	112	107	112	51 $\frac{1}{2}$	
Madras & South'n Mahabatta ..	3,230	15.9.34	100,125	- 2,205	24	2,749,532	2,700,050	+ 49,482	"	127	114 $\frac{1}{2}$	1281 $\frac{1}{2}$	7	
Rohilkund & Kumaon ..	546	15.9.34	7,498	+ 170	24	222,802	217,304	+ 5,498	"	260	225	2511 $\frac{1}{2}$	51 $\frac{1}{2}$	
South India ..	2,526	15.9.34	85,645	+ 3,401	24	1,963,280	1,883,291	+ 79,989	"	1191 $\frac{1}{2}$	112	1161 $\frac{1}{2}$	61 $\frac{1}{2}$	
Various.														
Beira-Umtali ..	204	July, 1934	62,234	+ 17,455	43	519,179	411,279	+ 107,900	—	—	—	—	—	
Bilbao River & Cantabrian ..	15	Sept., 1934	1,855	+ 225	39	16,195	13,820	+ 2,375	—	—	—	—	—	
Egyptian Delta ..	621	20.9.34	7,151	+ 1,850	24	98,013	88,827	+ 9,186	Prf. Sh.	151 $\frac{1}{2}$	13 $\frac{1}{2}$	23 $\frac{1}{2}$	36	
Great Southern of Spain ..	104	29.9.34	3,995	+ 1,252	39	85,384	83,827	+ 1,557	Inc. Deb.	4	3	31 $\frac{1}{2}$	Nil	
Kenya & Uganda ..	1,625	Mar., 1934	240,520	+ 21,064	12	638,137	606,192	+ 31,945	"	—	—	—	—	
Manila ..	—	—	—	—	—	—	—	—	B. Deb.	53	331 $\frac{1}{2}$	442 $\frac{1}{2}$	7 $\frac{1}{2}$	
Mashonaland ..	913	July, 1934	116,483	+ 42,625	43	956,615	650,063	+ 306,552	1 Mg. Db.	915 $\frac{1}{2}$	42	94	31 $\frac{1}{2}$	
Midland of W. Australia ..	277	Aug., 1934	14,055	+ 137	8	25,952	25,857	+ 95	Inc. Deb.	89	70	971 $\frac{1}{2}$	4 $\frac{1}{2}$	
Nigerian ..	1,905	18.8.34	19,770	- 11,667	20	519,306	462,588	+ 56,718	—	—	—	—	—	
Rhodesia ..	1,538	July, 1934	192,507	+ 58,885	43	1,612,748	1,187,812	+ 424,936	4 p.c. Db.	981 $\frac{1}{2}$	805 $\frac{1}{2}$	102	31 $\frac{1}{2}$	
South African ..	13,182	15.9.34	528,373	+ 69,420	24	11,926,133	10,463,306	+ 1,462,727	—	—	—	—	—	
Victorian ..	6,172	June, 1934	685,917	+ 61,400	52	9,175,111	9,446,121	- 271,010	—	—	—	—	—	
Zafra & Huelva ..	112	Aug., 1934	11,147	- 936	34	88,008	85,414	+ 2,594	—	—	—	—	—	

Note.—Yields are based on the approximate current prices and are within a fraction of 1%.

\* Traffic dislocated by floods. † Receipts are calculated @ 1s. 6d. to the rupee. ‡ Salvador receipts are in currency.

The variation in Sterling value of the Argentine paper peso has lately been so great that the method of converting the sterling weekly receipts at the par rate of exchange has proved misleading, the amount being overestimated. The statements from July 1 onwards are based on the current rate of exchange and not on the par value.

